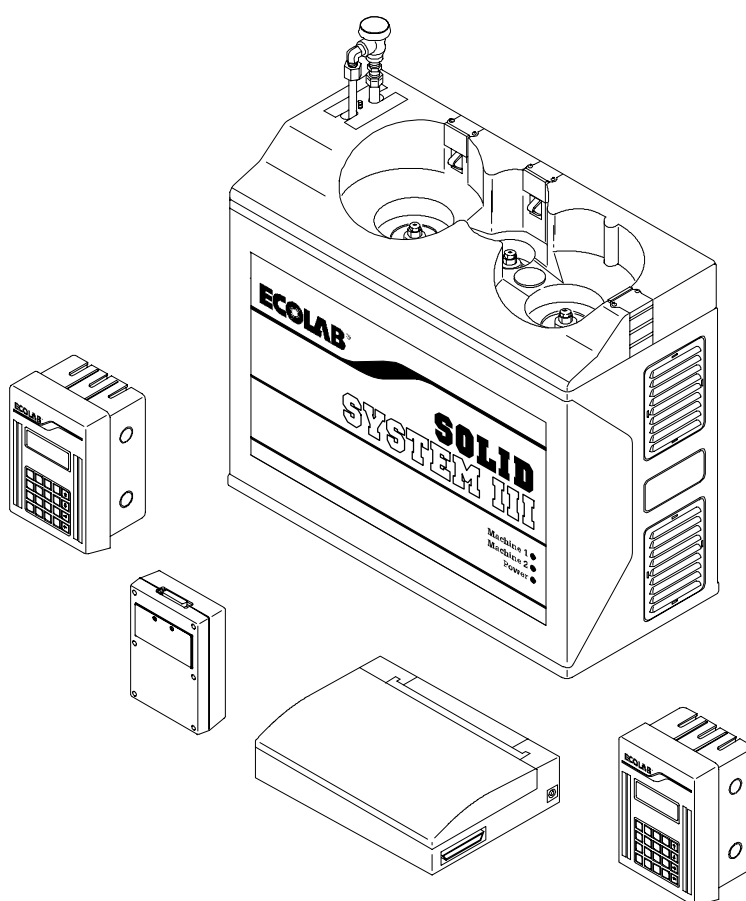


SOLID SYSTEM III MOLDED

Installation & Operation Manual



Retain this manual for installation, operation,
programming and servicing information.



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1.0 System Introduction

1.1 Preface

This manual presents the basic installation, operation, programming, and servicing instructions for the Solid System III. This manual applies, in its entirety, to current units.

Guidelines are suggested in reference to the preferred method of installation; however, the variety of equipment and the surrounding physical environment dictate the actual installation of the Solid System III.

WARNING: These installation, operation, and servicing instructions are for use by qualified personnel only. The installation must be made in accordance with local plumbing and electrical codes.

1.2 System Features

The Solid System III offers the following features:

- Dispenses three solid-laundry products from their respective shipping containers (Detergent, Bleach, and Sour/Softener).
- The Printer Module provides a buffer capability and a printer-language interpreter for printing of reports [via a cable connection to a Cannon BJ, E, EX, or SX printer (neither supplied)].
- The Pump Cabinet provides products for two wash machines.
- Empty capsule alarms for all three products.
- A maximum of 16 complete formulas per machine are available allowing a large range of formula flexibility for the OPL market.
- Each product has: a programmable delay setting up to 999 seconds, and a product amount programmable up to 999 grams.
- Each product is electronically measured while dispensing into the wash machine.
- Pump Cabinet automatically counts products dispensed and provides total loads completed.
- The Control Module allows for easy system programming.
- Account management and laundry personnel have access to load counts through the Control Module.
- Signal Input Boards automatically adjust from 24 VAC to 240 VAC.
- The Control Module display automatically switches from the Idle Screen to the Running Screen at the start of the wash formula. When the Control Module has completed the wash formula, it automatically returns to the Idle Screen.
- The Control Module provides current operating dispensing data.
- Two optional outputs have been provided for liquid products.
- Vacuum breaker is ASSE tested and approved.

1.3 Principle of Operation

The Control Module is wired into the wash machine programmer to automatically receive a 'Supply Signal' at predetermined times in the wash formula. Once a signal is received, the Pump Cabinet will inject specific product(s) at that time. Typically there should be three 'Supply Signals' from the wash machine for complete automatic operation.

The Solid System III is designed for wash machines having a load capacity of 35 to 125 lbs. (clean dry weight). Diluted products are delivered by the Pump Cabinet from their shipping containers to the appropriate wash machine (*Refer to Figure 1-1 and Figure 1-2.*) Each product has a programmable delay time up to 999 seconds and a programmable product amount up to 999 grams. A maximum of 16 formulas per machine can be programmed into the system by using the keypad on the Control Module.

The 'Supply Signal' input board, located inside the Control Module, automatically adjusts for machine signal voltages ranging from 24 VAC to 240 VAC. The Pump Cabinet operates on 120 VAC and delivers product to two different machines. One delivery tube is used for each wash machine (*Refer to Figure 1-1 and Figure 1-2.*) When the Pump Cabinet receives a supply #1 product signal, the Control Module display shifts from the Idle Screen to the Running Screen. At this time, it automatically runs the formula that has been selected. The display remains in the Running Screen until Sour/Soft cycle is completed. Then the display returns to the Idle Screen. The laundry operator at this time may run the same formula selection again or select a new formula before running the next load of linen.

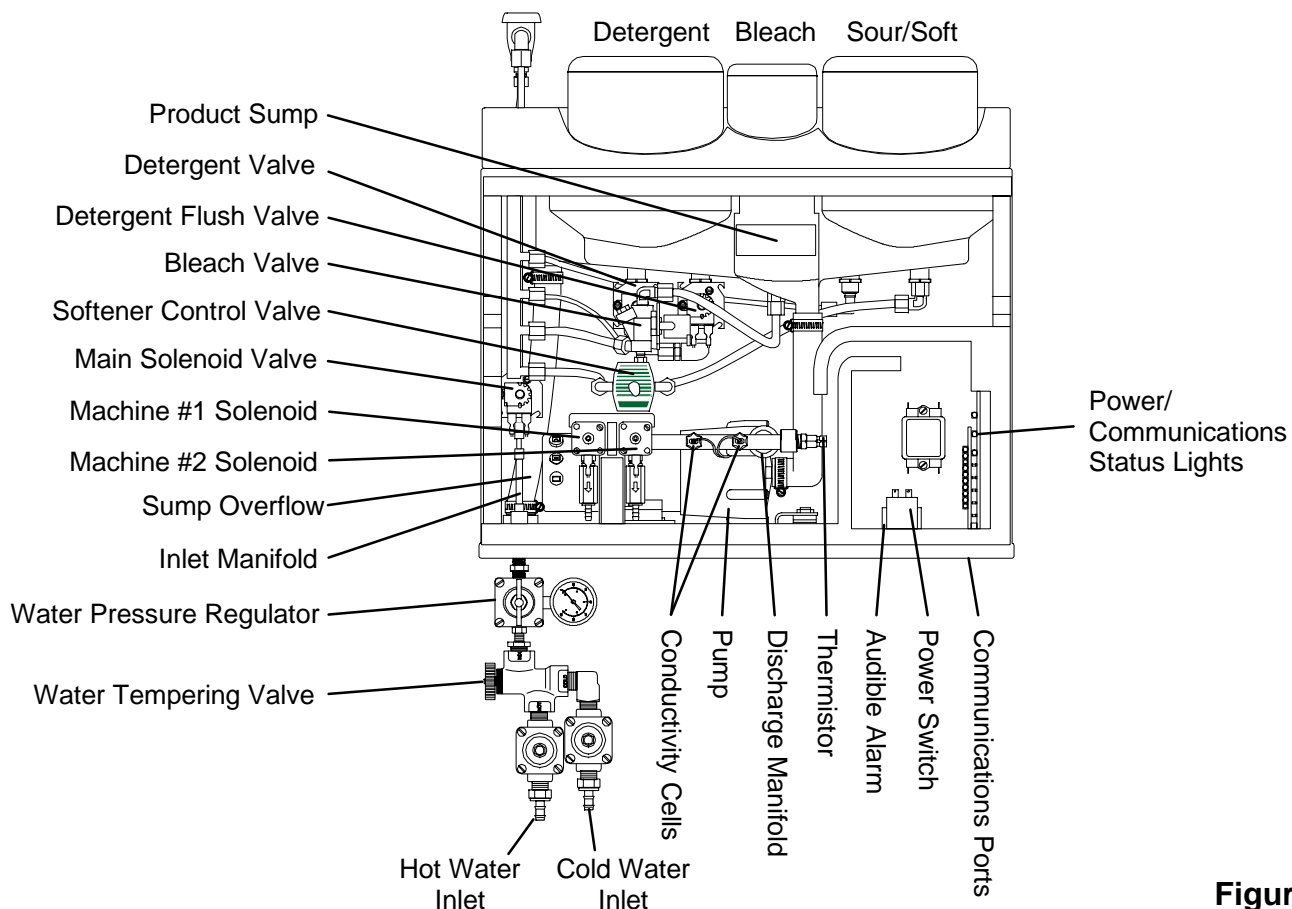


Figure 1-1

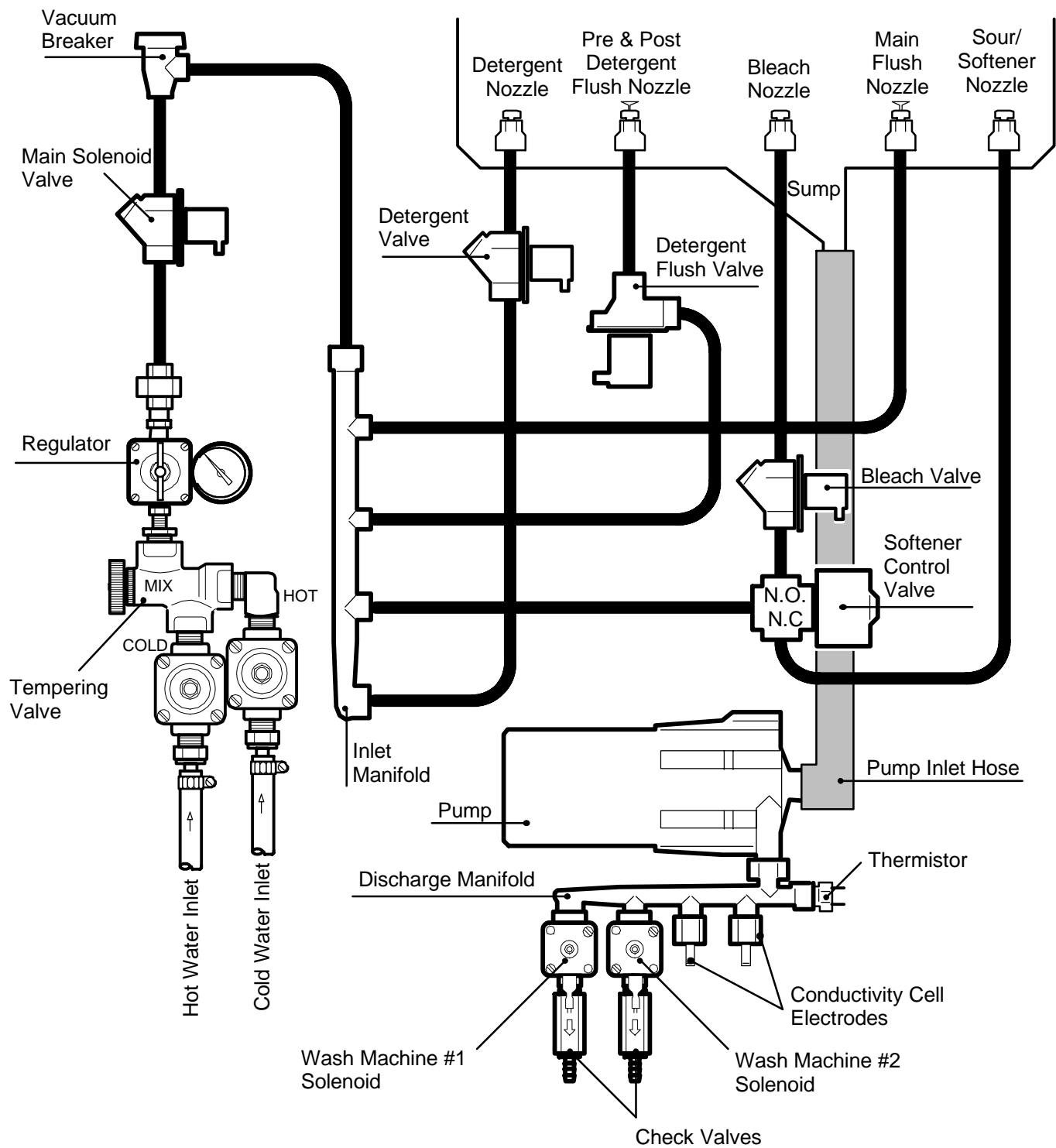


Figure 1-2

2.0 Pump Cabinet

This section provides an introduction in addition to the specification, utility, installation, and optional equipment requirements.

2.1 Introduction

This section describes the dispensing and component-servicing features.

2.1.1 Dispensing Capabilities

The following describes the dispensing capabilities of a Pump Cabinet:

- Dispenses three solid-laundry products from their respective shipping containers (Detergent, Bleach, and Sour/Soft).
- Provides two optional outputs for liquid products. (Liquid products pump directly into the wash machine using the TriStar 300D cabinet.)
- Supplies laundry products for two wash machines (35 to 125 lb. dry weight).
- Operates on 120 VAC.
- Outputs 0.8 gallon per minute.

2.1.2 Component Servicing

The following lists the component-servicing features:

- Allows easy access from the front and the side panels can be removed for increased serviceability.
- The pump assembly and 3 way valve are now positioned on slide out racks.
- Easy to identify and replace failed components. Refer to Section 6.0, Troubleshooting.

All servicing is to be done by Ecolab professionals.

2.2 Specifications

The following section discusses the cabinet space and service-access requirements.

2.2.1 Dimensions

The Pump Cabinet assembly has the following dimensions (see Figure 2-1):

- Height (H_1): 26" (66 cm)
- (H_2): 8" (20.3 cm)
- Width (W): 23" (58.4 cm)
- Depth (D): 10" (25.4 cm)
- Weight: 52 lbs (23.6 kg) [72 lbs (32.6 kg) with products]

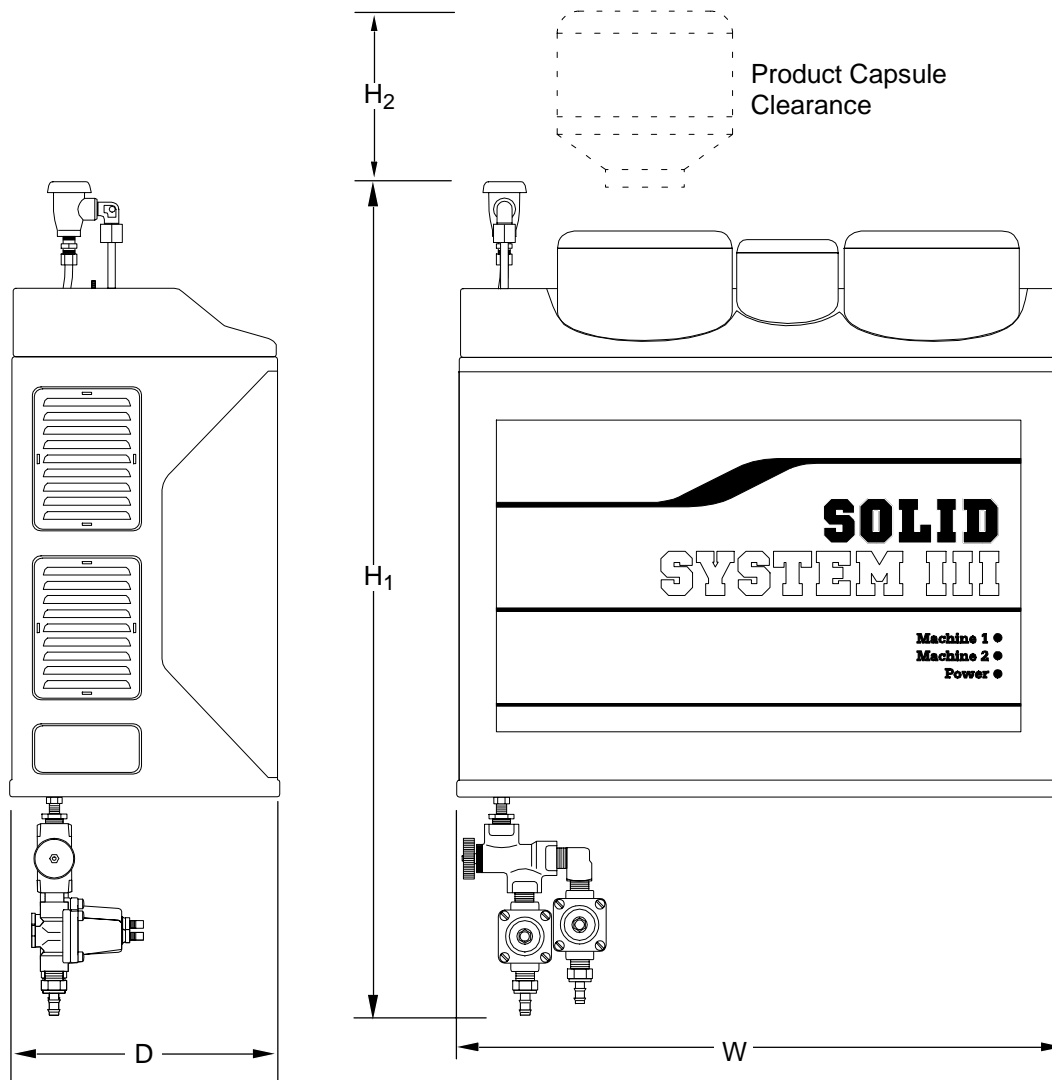


Figure 2-1

2.2.2 Service Access

The front cover is removable, held in place by two half-turn fasteners and a keylock. The Communications Cable will be connected on the bottom right side of the cabinet. Product outlet tubing will be attached on the bottom left side of the Pump Cabinet. The water supply inlet is located on the lower left side of the Pump Cabinet at the water regulator/tempering valve assembly. Allow a minimum of 8" for capsule replacement.

2.3 Utility Requirements

This section depicts the electrical and water-supply requirements.

2.3.1 Electrical Supply

The following are the electrical-supply requirements:

- A constant 120 VAC power source is required.
- The Pump Cabinet is shipped with a 7' (2 meter) power cord.
- For distances greater than 7', the Pump Cabinet must be hard wired with conduit.
- The double pole single throw ON/OFF switch is also a circuit breaker rated at 7.5 amps.
- Total amperage draw during normal operation is approximately 2.5 amps.

2.3.2 Water Supply

The following are the water-supply requirements:

- A 3/8" I.D. water supply line is required.
- Optimum operating temperature is 130°F (54°C) with a minimum operating temperature NOT TO fall below 110°F (43°C)
- Water flow rate is 0.8 GPM.
- Maximum water temperature must not exceed 145°F (63°C).
- The water tempering kit **MUST** be installed.

2.4 Installation Procedures

This section contains:

- Preplanning requirements
- Materials ordered separately
- Pump Cabinet installation
- Product injection-tube installation
- Overflow, water-supply, and electrical connections

2.4.1 Preplanning Requirements

There is no substitute for planning the installation prior to beginning the work. Several minutes in planning may save an hour or more during the installation. The following is a list of factors to consider before the installation of the system begins. *Refer to Figure 2-2.*

- Location of the Pump Cabinet **MUST BE** within 50' (15 meters) of both wash machines.
- The Pump Cabinet **MUST BE** mounted at or below the operators eye-level. Ease of capsule replacement is important.
- Cabinet mounting bracket **MUST BE** securely anchored to the wall. **On sheetrocked walls, align the center mounting hole to a wall stud.**
- A power source of 120 VAC is required within 7' (2 meters) of the Pump Cabinet. **DO NOT use power from a wash machine.**
- Allow sufficient space around the perimeter of the cabinet for capsule replacement and servicing. It is recommended to allow 8" (20.3 cm) above the Pump Cabinet.
- Outlet tubing **MUST NOT** exceed 50' in length. This is important to know when positioning the Pump Cabinet.
- Optimum water temperature during operation is 130°F (54°C).
- Minimum water temperature **MUST NOT** fall below 110°F (43°C).
- Maximum water temperature **MUST NOT** exceed 145°F (63°C).
- Mount the Control Module at a convenient location for wash machine signal inputs and laundry employee operation (suggest wash machine mounting). It is recommended to allow 4" (10.1 cm) of clearance below the Control Module for service access.

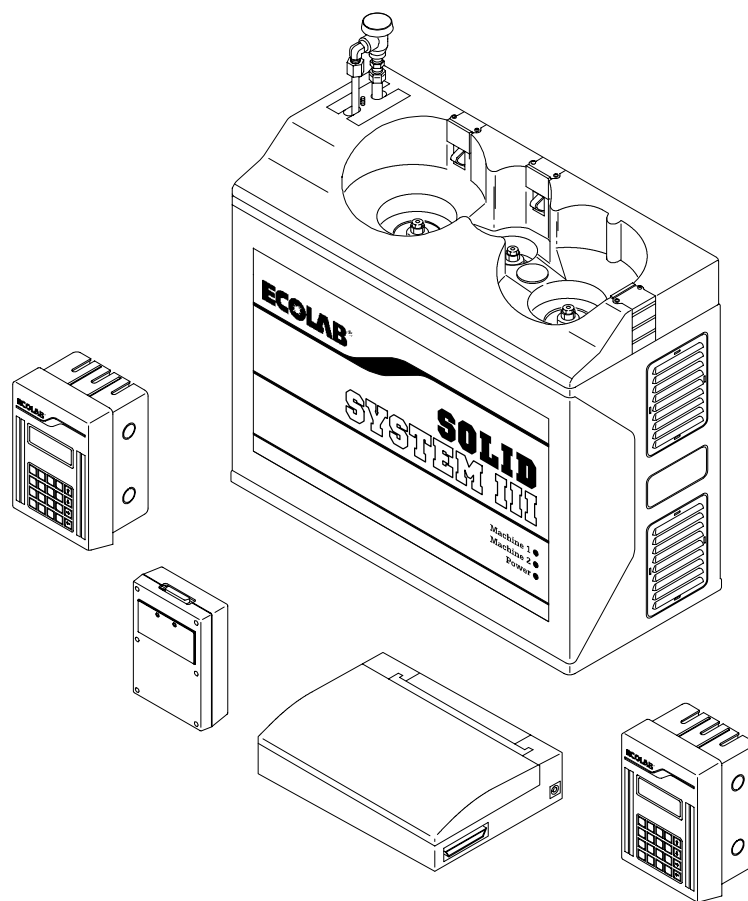


Figure 2-2

2.4.2 Materials Ordered Separately

The following bulleted items depict the materials that need to be ordered separately:

- Outlet tubing must be 1/2" Polyflo. This tubing withstands higher temperatures than EVA.
- The 5/8" Mayon tubing used for the overflow is not included in the installation kit.
- For Pump Cabinet distances greater than 20' (6 meters), a 50' (15 meters) communication cable may be ordered, *refer to Cable Connectors - Pump Cabinet Assembly on page 7-2.*
- 1/2" conduit or Seal-Tite with connectors and fittings (hardwired power source and supply signals).
- 14 gauge wire for the 120 VAC power source, if the 7' (2 meter) power cord is not used.
- Copper tubing (*Refer to Item 31 on page 7-2 - Water Supply Connection*).
- Optional product pump cabinet TriStar 300D, *refer to Section 2.5 Optional Equipment on page 2-11.*
- Optional liquid cable, *refer to Section 7.4 Optional Parts on page 7-3.*

2.4.3 Pump Cabinet Installation

Review the preplanning information before installing the Pump Cabinet. A special offset mounting bracket is provided which simplifies the mounting of the Pump Cabinet.

1. Position the offset mounting bracket against the wall at eye-level, *refer to Figure 2-3*.

NOTE: On sheetrocked walls, align the center mounting hole to a wall stud. Mounting bracket **MUST BE** securely anchored to the wall.

2. Using a pencil, outline each of the holes in the offset mounting bracket.
3. Drill the outlined holes with a 1/4" masonry bit and place a wall anchor, supplied in the installation kit, into each hole.
4. Mount the bracket to the wall using the supplied wall anchors.

NOTE: Be careful when lifting the Pump Cabinet, this weighs 52 lbs. without capsules.

5. Lift the Pump Cabinet up and onto the mounting bracket, utilizing the mating bracket on the back of the cabinet.
6. With the Pump Cabinet on the wall, use a pencil to outline the three holes on the bottom flange.
7. Remove the Pump Cabinet from the wall.
8. Drill the outlined holes with a 1/4" masonry bit and place a wall anchor, supplied in the installation kit, into each hole.
9. Lift the Pump Cabinet up and onto the mounting bracket, utilizing the mating bracket on the back of the cabinet.
10. Secure the bottom flange of the Pump Cabinet to the wall using the supplied wall anchors.

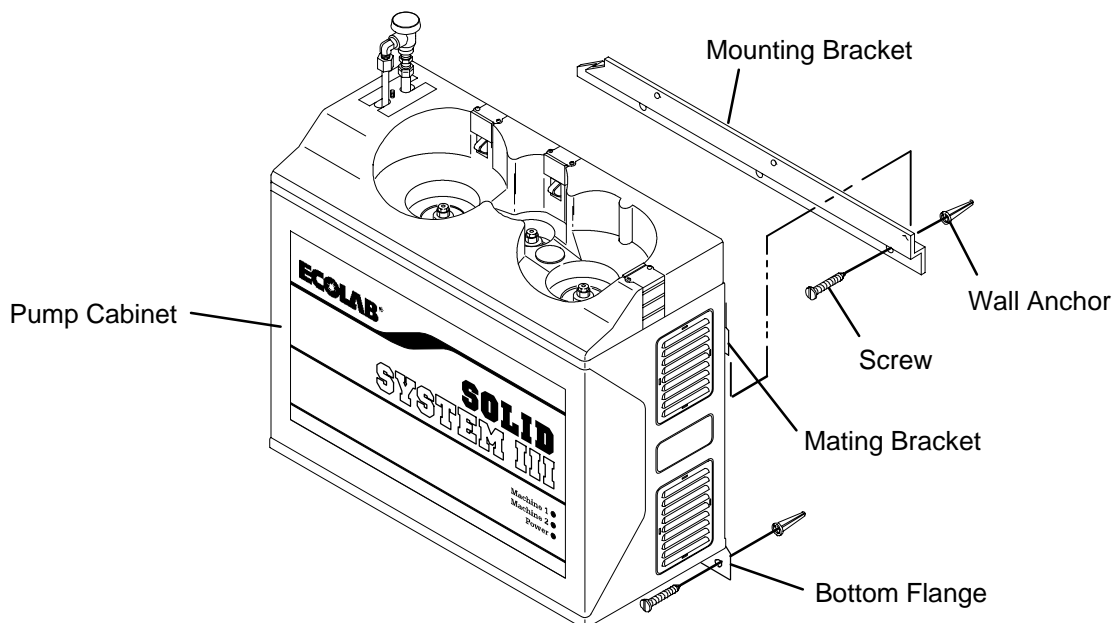


Figure 2-3

2.4.4 Product Injection-Tube Installation

A single 1/2" Polyflo outlet tube is used to deliver all three products to each wash machine. It is important that the outlet tubing **DOES NOT** exceed 50' (15 meters).

1. Remove the front cover on the Pump Cabinet and locate the solenoid valves in the lower left-hand corner of the cabinet. Wash Machine #1 is located on the left and Wash Machine #2 on the right. *Refer to Figure 2-4.*
2. Route the 1/2" Polyflo from the Pump Cabinet to the wash machine.
3. Connect the 1/2" Polyflo tubing to the solenoid valves mentioned above. Secure the connection with a hose clamp.
4. Route the opposite ends of the 1/2" Polyflo tubing to the designated wash machines (Wash Machine #1 and #2).
5. Secure the tubing at the injection port of the wash machine.
6. Anchor the tubing to the wall or ridged piping to keep the installation looking neat and clean.

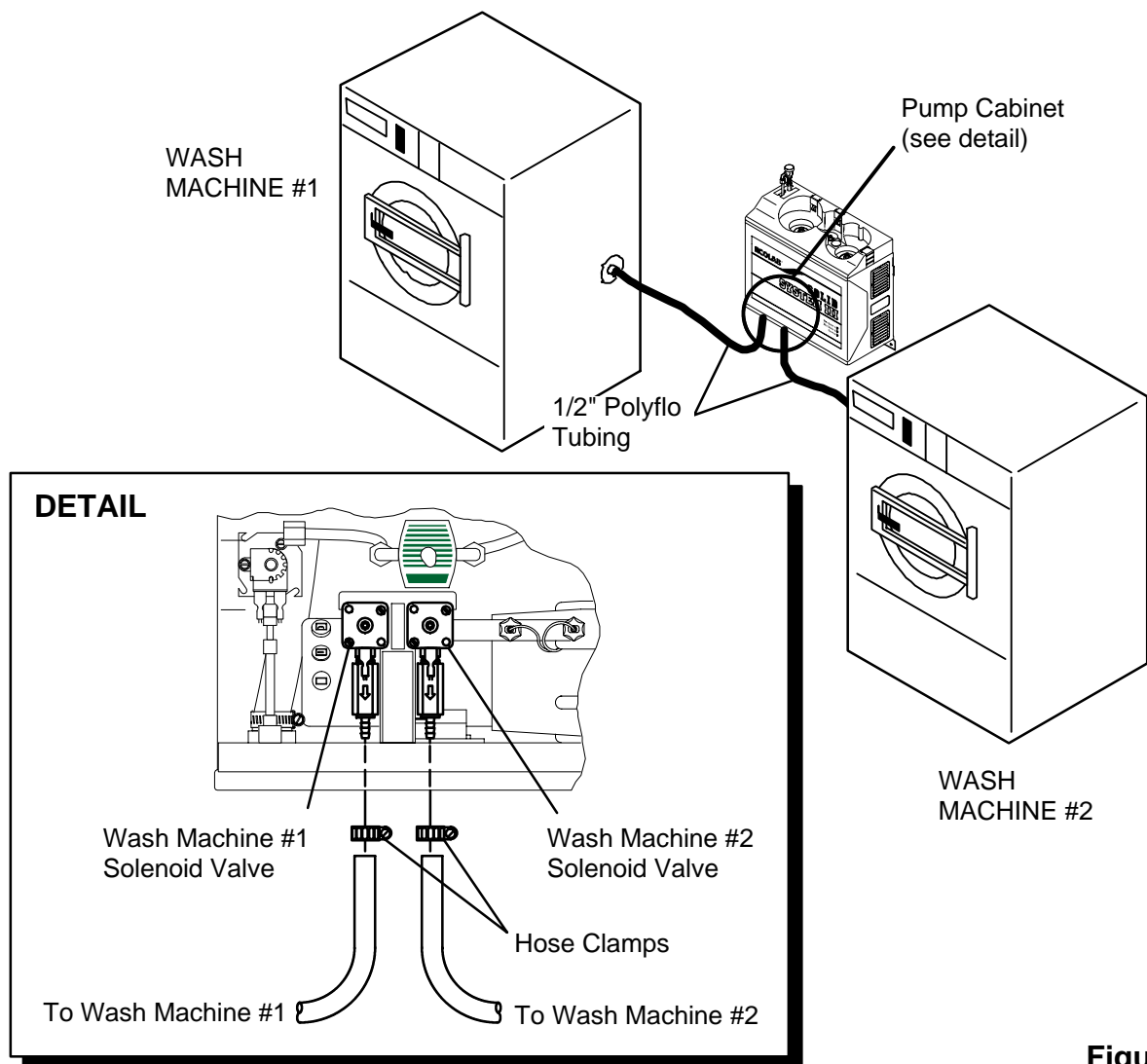


Figure 2-4

2.4.5 Overflow Connection

An overflow for the Pump Cabinet's sump is provided to direct the solution to a drain should the pump or water solenoid fail. *Refer to Figure 2-5 on page 2-9.*

1. Measure the distance to the floor drain and cut your 5/8" Mayon tubing to the desired length.
2. Connect a 5/8" Mayon tube to the sump overflow located on the bottom side of the Pump Cabinet.
3. Secure the connection with a hose clamp provided in the installation kit.
4. Route the opposite end of the Mayon tubing to a floor drain or drain trench.
5. If possible, try to secure the end of the Mayon tube to the floor drain with a ty-wrap. This prevents the hose from being kicked around."

NOTE: If a drain is unavailable, an empty five gallon pail should be used.

2.4.6 Water-Supply Connection

Supplied with the Pump Cabinet is a water tempering valve assembly. Utilize this assembly to maintain an optimum water temperature of 130°F (54°C). *Refer to Figure 2-5 on page 2-9.*

NOTE: Water temperature should not drop below 110°F (43°C) nor rise above 145°F (63°C).

2.4.6.1 Hose Plumbing Method

The following steps describe the water-supply connection using the hose plumbing method:

1. Using the pipe union connection, attach the regulator and tempering valve assembly to the Pump Cabinet supply water manifold inlet.
2. Utilize the two hose Y" connectors, included in the installation kit, and provide a hot and cold water source for the tempering valve.
3. Run the two hoses provided from the hot and cold water source to the hot" and cold" inlets on the tempering valve.
4. Cut each hose to the correct length and secure the hot" and cold" inlet connections with a hose clamp.

2.4.6.2 Hard-Copper Plumbing Method

If the water supply connection must be copper tubing, you are responsible for the correct pipe fittings and connectors to complete the installation. **Always use the tempering valve and water regulator assembly. Barb fittings can be removed and replaced with the appropriate fittings to accommodate copper tubing. DO NOT solder to the inlet check valves, damage to check valve seals may occur. Hot and cold water supply lines require a minimum 3/8" copper tube.**

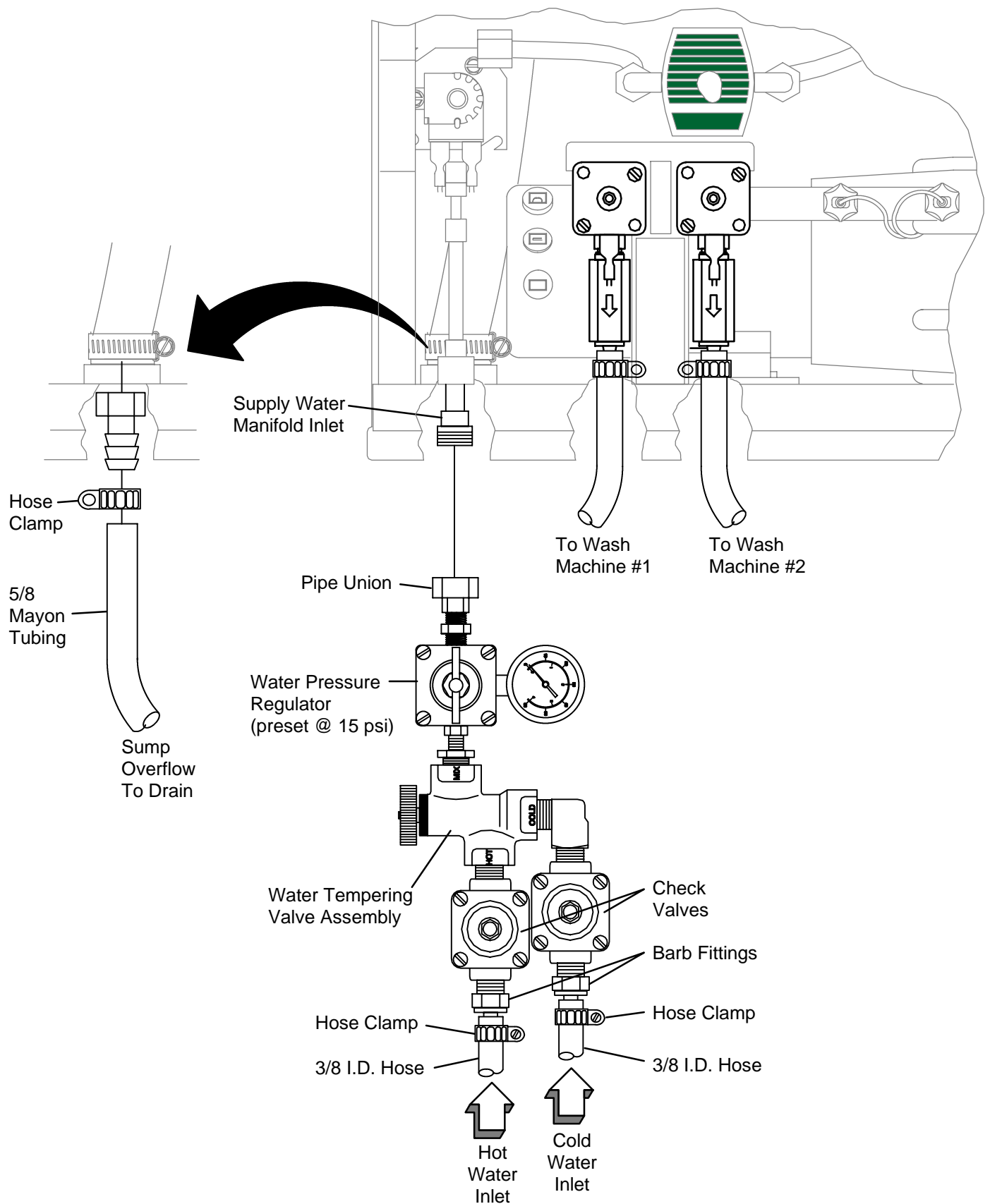


Figure 2-5

2.4.7 Electrical Connections

The Solid System III requires 120 VAC to operate. The Pump Cabinet comes with a pre-installed 7' (2 meter) electrical cord and is ready to plug in.

NOTE: If a condition exists where the cord cannot be used (i.e. distances greater than 7'), a minimum of 14 ga. wire enclosed in conduit or Seal-Tite is required.

NOTE: DO NOT use power from a wash machine to operate the Pump Cabinet.

1. Remove the existing BROWN and BLUE wires off of the terminal posts on the front of the ON/OFF circuit breaker (BROWN is hot, BLUE is common).
2. Remove the GREEN wire with the YELLOW tracer off of the bottom of the in-line filter (GREEN is ground).
3. Remove the 7' power cord from the Pump Cabinet.
4. Field wire a new HOT, COMMON, and GROUND wires with the Pump Cabinet. These **MUST BE** brought into the Pump Cabinet in conduit or Seal-Tite.
5. Attach the HOT and COMMON wires to the terminal posts on the front of the ON/OFF circuit breaker.
6. Attach the GROUND wire to the grounding lug located on the front of the electrical box.

2.5 Optional Equipment

This section provides installation instructions for the optional liquid-product and Chart Stop features. You will need to order a Tri-Star 300D Pump Cabinet (with 120-VAC Relay) and an optional liquid cable, *refer to Section 7.4 Optional Parts on page 7-3.*

2.5.1 Optional Liquids

To field wire the optional liquid products on the Pump Cabinet, complete the following tasks.

WARNING: Disconnect the power source from the Pump Cabinet.

The Pump Cabinet has two optional outputs to operate the Tri-Star 300D. If you have the Pump Cabinet delivering product to two wash machines, **you may deliver one optional product to each machine.**

If the Pump Cabinet is only delivering product to one wash machine, then both of your optional liquid products could be delivered to that machine.

Optional liquid products **ARE NOT** flushed into the wash machine by the Pump Cabinet.

Route tubing from Tri-Star to wash machine using standard procedures.

1. Install a Tri-Star 300D cabinet at a location that is convenient to inject liquid products into two separate wash machines from one 300D pump cabinet. (Tri-Star 300D 120-VAC and 120-VAC relays, *refer to Section 7.4 - Optional Parts on page 7-3.*)
2. The Tri-Star 300D requires a constant 120-VAC power source. The power source can come from the Pump Cabinet. In the Pump Cabinet, disconnect the BLUE and BROWN wires on the power cord at the front of the ON/OFF circuit breaker. Install the piggyback connectors on each of the terminal posts. Reinstall the BLUE and BROWN wires to the terminal posts.
3. Run conduit or Seal-Tite from the Pump Cabinet over to the Tri-Star cabinet. Pull seven wires between the two cabinets. Attach two of the wires to the long BLACK and WHITE wires in the Tri-Star cabinet. Attach the other two ends to the piggyback connectors used on the front of the ON/OFF circuit breaker in the Pump Cabinet. The Tri-Star now has a constant 120-VAC power source.
4. A third wire (GROUND) needs to be attached to the ground post located on the right hand side of Tri-Star cabinet. The other end of this wire (GROUND) is connected to the ground post located at the front right hand side of the Pump Cabinet.
5. The Optional Liquids Cable has a connector with four wires assembled. This connector has one WHITE wire with a BLACK tracer, one WHITE wire with a RED tracer, one BLACK wire, and one RED wire.
6. At the Pump Cabinet, slide the CPU card out to the service position. On the high-voltage output board that has ten red LEDs, locate the J5 connector and install the connector from step 5 at this location (second from bottom).
7. The four wires are be used in the following combinations (top to bottom on the connector):

Product #04	Position #1	WHITE/RED tracer	Machine #1
	Position #2	RED	
Product #05	Position #3	WHITE/BLACK tracer	Machine #2
	Position #4	BLACK	

- a. WHITE wires with tracers are common.
- b. RED wire and BLACK wire are 120-VAC outputs.

-
8. At the Tri-Star 300D cabinet, remove the jumper wire installed on posts 17, 15, 13, and 11.
 9. To install Product #04 at the Tri-Star 300D pump cabinet:
 - a. Attach the WHITE wire with RED tracer from position #1 in the Solid System III Pump Cabinet (step 7) to Tri-Star post #17.
 - b. Attach the RED wire from position #2 in the Solid System III Pump Cabinet (step 7) to Tri-Star post #16.
 - c. Tri-Star pump #1 wiring has now been completed.
 10. To install Product #05 at the Tri-Star 300D pump cabinet:
 - a. Attach the WHITE wire with BLACK tracer from position #3 in the Solid System III Pump Cabinet (step 7) to Tri-Star post #15.
 - b. Attach the BLACK wire from position #4 in the Solid System III Pump Cabinet (step 7) to Tri-Star post #14.
 - c. Tri-Star pump #2 wiring has now been completed.
 11. All sixteen (16) formula levels have a programmable delay and pump on time for product #04 and #05.
 12. At the Control Module, program in the correct amount of DELAY and ON time in seconds required for product #04 and #05.
 - a. DELAY - this is the amount of delay time after the signal has been received before the Solid System III Pump Cabinet operates the Tri-Star 300D relay. Programmable from 000 up to 999 seconds.
 - b. ON TIME - this is the amount of ON time the Solid System III Pump Cabinet operates the Tri-Star 300D relay. When this relay is closed, it turns on the peristaltic pump to deliver product to the wash machine.
 13. A separate signal can be used to activate the optional liquid products. This signal is routed into the Control Module and installed on the input board. *Refer to Figure 3-4 on page 3-7.*
 14. If a separate signal is not available, a jumper at the input board could be installed from one of the other machine signals.

EXAMPLE: Optional Product #04 for Machine #1 - POLYSIZE. (Fixed timer machine w/limited signals).

- a. Install a jumper wire at the input board from input #03 (Sour/Soft) to #04 (Optional Liquid).
- b. If a separate machine supply signal is available at the washer, then wire this output to the control module input board at position number 4. The optional liquid can now be triggered independently.

15. Program the Control Module with the following information.

EXAMPLE: Machine #1 with Inputs 3 and 4 wired to the same washer output.

Formula #01 - Sheets	
Product #03	(SOLID SOFT)
DELAY	010 SECONDS
RUN	020 GRAMS
Product #04	(POLYSIZE TRI-STAR 300D)
DELAY	000 SECONDS
ON	000 SECONDS
Formula #14 - White Napkins	
Product #03	(SOLID SOFT)
DELAY	000 SECONDS
RUN	000 GRAMS
Product #04	(POLY SIZE TRISTAR 300D)
DELAY	030 SECONDS
ON	040 SECONDS

2.5.2 Chart Stop

The Chart Stop feature provides **two** helpful functions when the Solid System III Pump Cabinet is installed on a fixed-timer wash machine.

- By jumpering a product signal to the Chart Stop signal input (Input #06), you can extend the product contact time of that bath. *Refer to Figure 3-5 on page 3-8.*

EXAMPLE: Jumpering the Detergent supply signal to the Chart Stop signal (Input #06) allows you to extend the suds bath.

Chart stop allows you to program a delay time (how long you want the wash machine to run, after receiving the Chart Stop signal, before interrupting the wash machine timer) and a runtime (how long you want to extend the step).

- The Chart Stop stops the timer of a wash machine when it has a product feed while the Solid System III is dispensing to another wash machine. Chart Stop restarts the wash machine timer when the product dispensing to the other wash machine is complete. The Pump Cabinet then dispenses the product that was requested.

Chart Stop program times are found for each of the 16 formulas after the 5th product delay and product amounts in the Basic Programming Mode.

To field wire the Chart Stop feature on the Pump Cabinet, complete the following procedure:

WARNING: Disconnect power at the wash machine and Pump Cabinet.

1. Mount the Chart Stop Relay Control Box at a location within 5' (1.5 meters) of the Pump Cabinet.

NOTE: New Pump Cabinets have been prewired with a quick connector installed on lower right-hand side of the cabinet.

2. If there is a quick connector cap on your Pump Cabinet, use the prewired 5' cable from the Relay Control Box and connect the cable to the Pump Cabinet. Go to step 9.
3. If there is no quick connector cap on your Pump Cabinet, cut the connector off of the 5' cable of the Relay Control Box. Route the 5' cable through the knockout located at the lower right-hand side of the cabinet.
4. Be sure to use a 1/2" Romex connector at the knockout to provide strain relief for the relay cable. (12 VDC low voltage cable).
5. At the Pump Cabinet, slide the CPU card out to the service position.
6. On the CPU card, locate the J5 connector (J5 is located at the lower left-hand corner of the large card). *Refer to Figure 2-6 on page 2-16.*
7. Locate the six leads ty-wrapped together (six wires with butt-connectors installed). They should be colored:
 - White • Brown
 - Violet • Green
 - Orange • Green

NOTE: Units built before 4/1/93 do not have GREEN ground wires. Two wires will need to be attached and connected to the ground screw in the Pump Cabinet.

-
8. Using the 5' (1.5 meters) cable from the Relay Control Box, connect the following combination of wires together.

<u>Cabinet</u>		<u>Cable</u>		<u>Cabinet</u>		<u>Cable</u>
• White	to	Black	•	Brown	to	Brown
• Violet	to	Red	•	Green	to	Green
• Orange	to	Orange	•	Green	to	Green

9. At the Relay Control Box, the following wire combinations at the relay will identify Wash Machine #1 and #2.

- Machine #1 = **Red Wire A" terminal**
Brown Wire B" terminal
- Machine #2 = Orange Wire A" terminal
Black Wire B" Terminal

10. Pump Cabinet wiring has now been completed.
11. Starting at the Relay Control Box, run Seal-Tite or conduit over to each wash machine. Route the Seal-Tite to a convenient location at the wash machine for access to the timer motor leads.
12. Wash machine timer motors are typically 120 VAC. Anytime high voltage is routed from the wash machine, Seal-Tite or conduit must be used. In Seal-Tite, run two 18-gauge insulated wire through the Seal-Tite used between the wash machine and Relay Control Box.
13. At the wash machine, cut one of the timer motor leads and attach the motor leads in series with the relay using the wire you just provided.
14. At the relay, terminals 1 and 3 are normally closed. From the motor lead that has been cut, one lead is brought to post 1 and the other to post 3 at the terminal strip in the Relay Control Box.
15. To activate the Chart Stop feature, a signal to Input #6 on the input board is required. A separate wash machine signal allows you to program that signal from the machine whenever you choose to use the Chart Stop feature. This allows you to extend any and all steps in a wash formula.
16. If a separate signal for Input #6 is not available, then you need a jumper from **ONE** of the other supply signal inputs over to Input #6. The same common may be used at the input board.
17. By using an existing wash machine signal, detergent for instance, will only allow you to use the Chart Stop feature when that signal is present. With the detergent signal jumped to Input #6, you can only extend the suds bath. Remember Input #1 and #6 are always on simultaneously.
18. All sixteen formula levels have a programmable Chart Stop DELAY time and ON time in seconds.
- a. DELAY (DLY) - This is the amount of delay time after the signal has been received before the relay opens the contacts and stops the wash machine timer. Programmable from 000 up to 999 seconds.
 - b. ON - This is the amount of time the relay opens contacts 3 and 1 and holds the wash machine timer in its present position. Programmable from 000 up to 999 seconds.
19. Select when you need to use the Chart Stop feature. Provide a jumper from that input signal over to Input #6.

20. Program each formula level of Chart Stop as needed.

EXAMPLE: Milnor System 4 ON" light Supply Input #1 jumper at input #1 to #6.

Formula #01 - Sheets

Chart Stop DLY 000 seconds (Chart Stop not required for this formula)
 ON 000 seconds

Formula #14 - Diapers

Chart Stop DLY 005 seconds (Chart Stop is required for this formula)
 ON 090 seconds

21. When the Chart Stop Feature has been installed, the Pump Cabinet automatically holds a wash machine in its current position, if supply signals have been provided by both wash machines simultaneously. The Pump Cabinet also holds a wash machine in its current position if the Pump Cabinet is providing product to a wash machine and the other wash machine requests a supply. In both of these examples, no product contact time is lost.

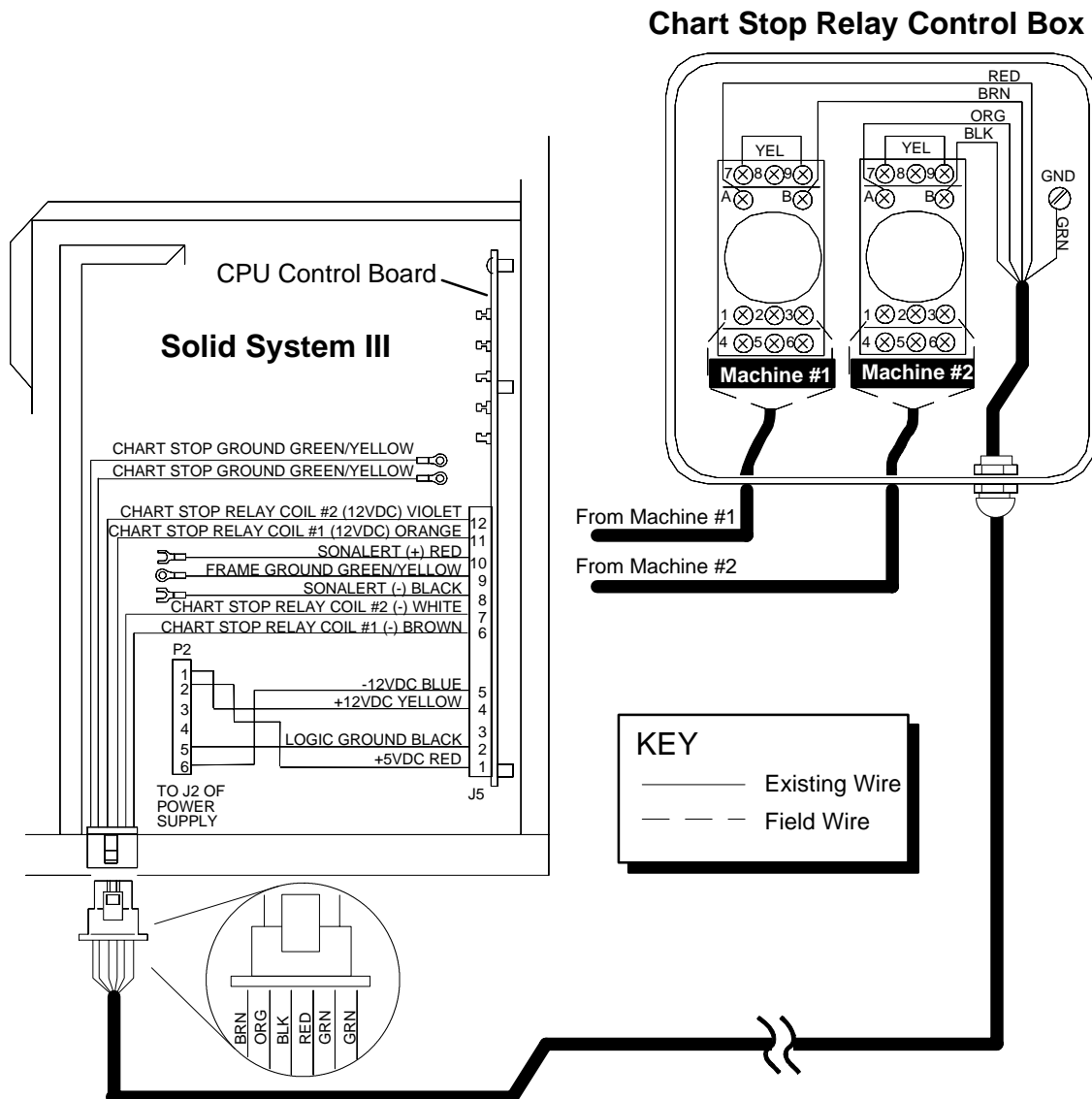


Figure 2-6

3.0 Control Module

This section contains the following subsections:

- Introduction
- Specifications
- Installation
- Wash Machine Signal Inputs
- Communications Cable
- Termination Connector
- Keypad Functions
- Software Features
- Quick Programming
- Printer Programming
- Printer Reports

3.1 Introduction

Control Module features include:

- Allows for easy system programming
- Access to load counts for account management and laundry personnel
- Provides current dispensing data
- Allows programming of 16 complete formulas per wash machine
- Adjusts for wash machine signal voltages ranging from 24 VAC to 240 VAC
- Has programmable delay time up to 999 seconds and product amount up to 999 grams

3.2 Specifications

3.2.1 Dimensions

The Control Module input assembly has the following dimensions (*refer to Figure 3-1*):

- Height (H_1): 7-7/8" (20 cm)
- (H_2): 4" (10.1 cm)
- Width (W): 5" (12.7 cm)
- Depth (D): 4-1/4" (10.8 cm)
- Weight: 5 lbs. (2.3 kg)

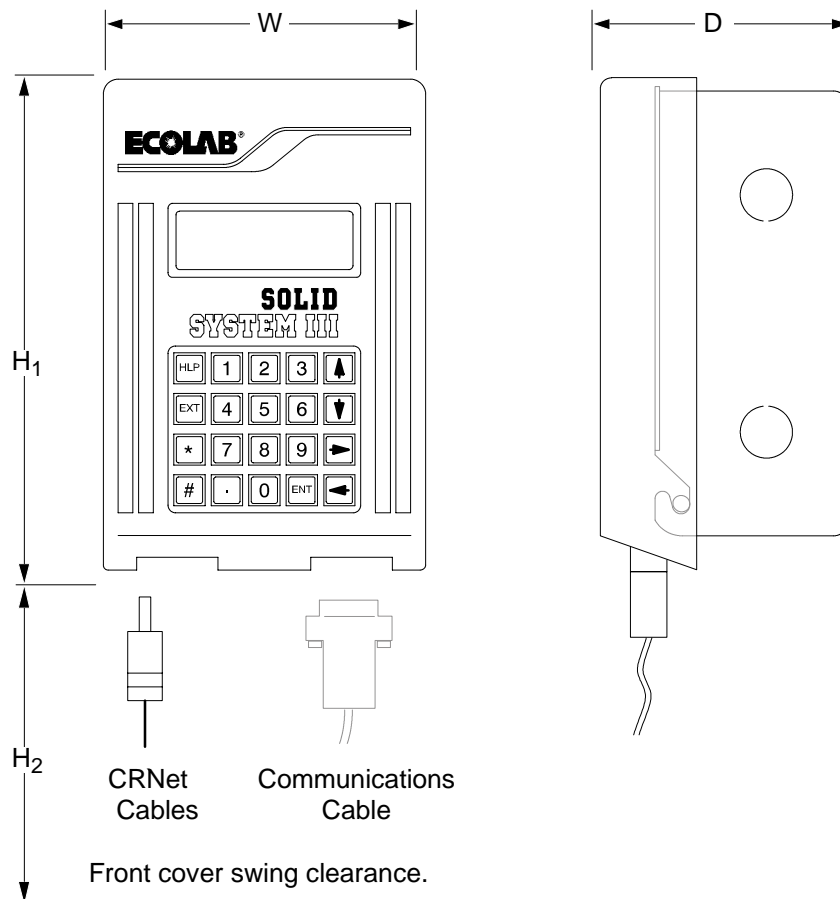


Figure 3-1

3.2.2 Service Access

The cover is hinged on the bottom of the cabinet. Access to the inside requires the removal of a screw from the top of the Control Module. The front cover swings down 90°. The communications port is located at the bottom right-hand corner of the cabinet. Allow a minimum of 4" of clearance below the Control Module for communication cable connection and door swing. The CRNet cable ports are located at the lower left-hand corner of the Control Module.

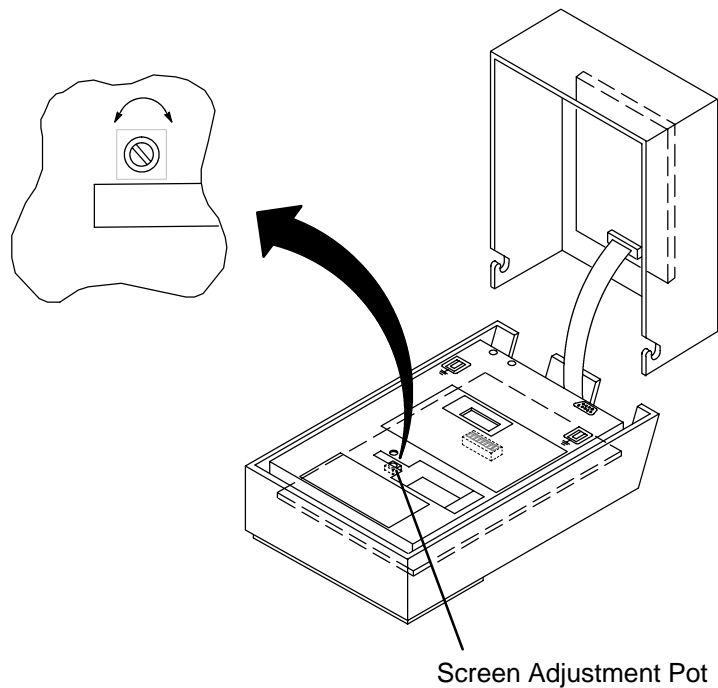
3.2.3 Components Supplied

The following components are supplied with the Control Module:

- Signal Input Board and input connectors
- Two types of mounting brackets
- Communications cable

3.2.4 Display Viewing Angle

1. The display view can be adjusted by 60°.
2. Locate the view adjustment pot and turn clockwise or counterclockwise until the view on the display is clear.
3. This adjustment is needed because of Control Module location and positioning.



3.3 Installation

The operator keypad and Signal Input Board have been provided in the Control Module. Two different types of mounting brackets have also been supplied. These brackets were designed, for three brands of wash machines. Mounting the Control Module to the wash machine can be done without drilling new holes in the washer.

The Communications Cable linking the Control Module with the Pump Cabinet comes in a 20' length. For distances greater than 20', order a 50' cable, *refer to Cable Connectors - Pump Cabinet Assembly on page 7-2*. These cables are preassembled and not field adjustable.

3.3.1 Uniwash Bracket

This bracket fits Uniwash machines only. *Refer to Figure 3-2*.

NOTE: Remove the top cover above the wash machine control cabinet (above Keypad).

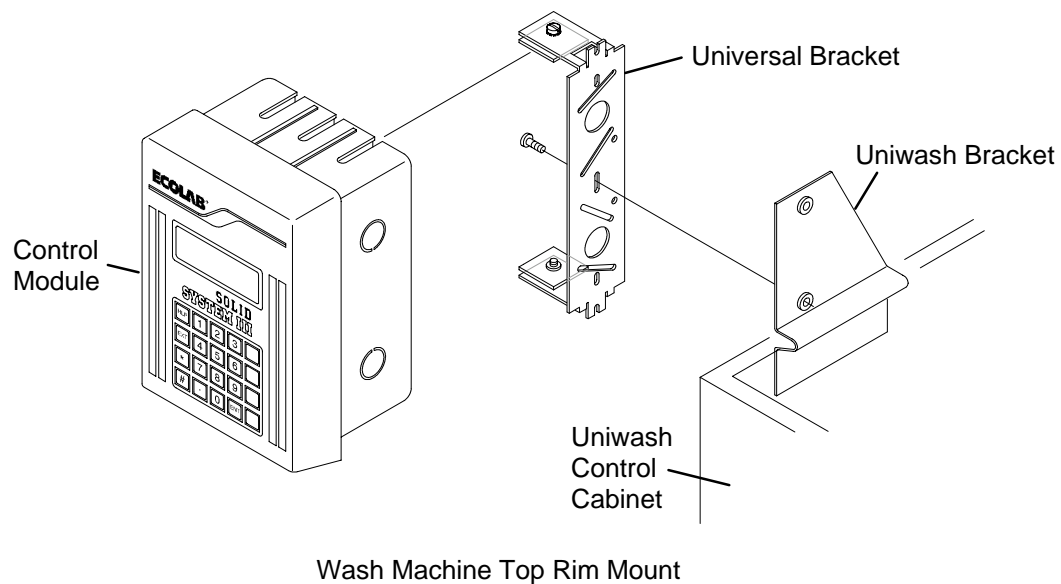


Figure 3-2

3.3.2 Universal Bracket

This bracket fits Wascomat and Milnor System 4 and 7 wash machines. *Refer to Figure 3-3.*

NOTE: Use the two Phillips screws located on the right or left of the wash machine just below the cover.

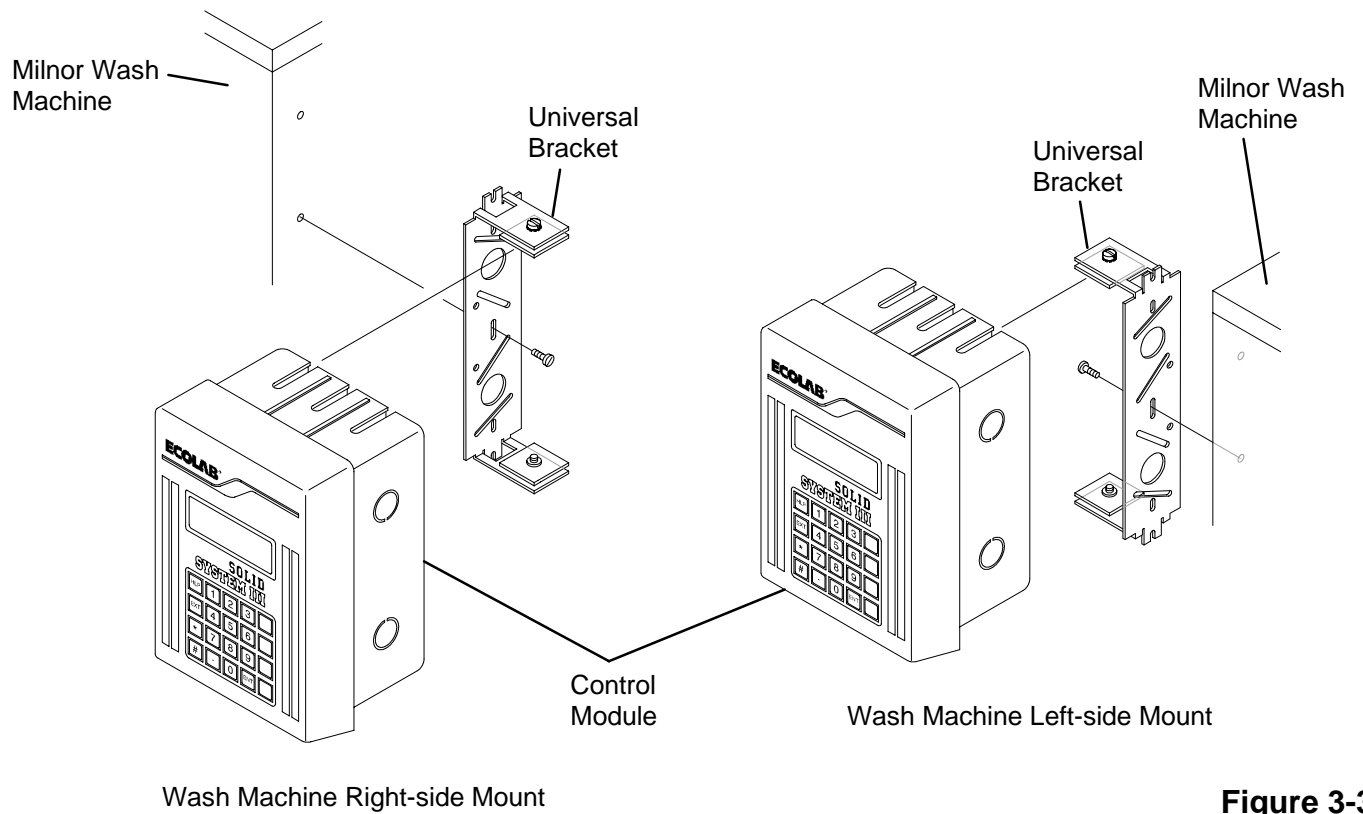


Figure 3-3

3.4 Wash Machine Signal Inputs

WARNING: Disconnect power to the wash machine before proceeding with the following instructions.

1. Mount the Control Module to the wash machine in a position accessible to the laundry employees. Always use the supplied mounting brackets.
2. Open the Control Module by turning the captive fastener one full turn. The front of the Control Module swings down, *refer to Figure 3-5 on page 3-8*.
3. Locate the wash machine supply signals inside the wash machine. *Refer to the Wash Machine Wiring Handbook*.
4. Route the supply signals, through conduit or Seal-Tite, into one of the knock-outs on the Control Module.
5. Connect the supply signals into the supply Signal Input Board, *refer to Figure 3-4 on page 3-7*.
6. Repeat the preceding instructions for wash machine Control Module #2.
7. To verify wash machine supply signal inputs, *refer to Section 3.9.3 Diagnostics on page 3-23*.

NOTE: Be sure to connect a ground wire to the ground stud" located inside the Control Module and to the wash machine ground. This is important for operator safety.

NOTE: The supply Signal Input Board adjusts automatically to 24, 120, or 240 volt supply signals.

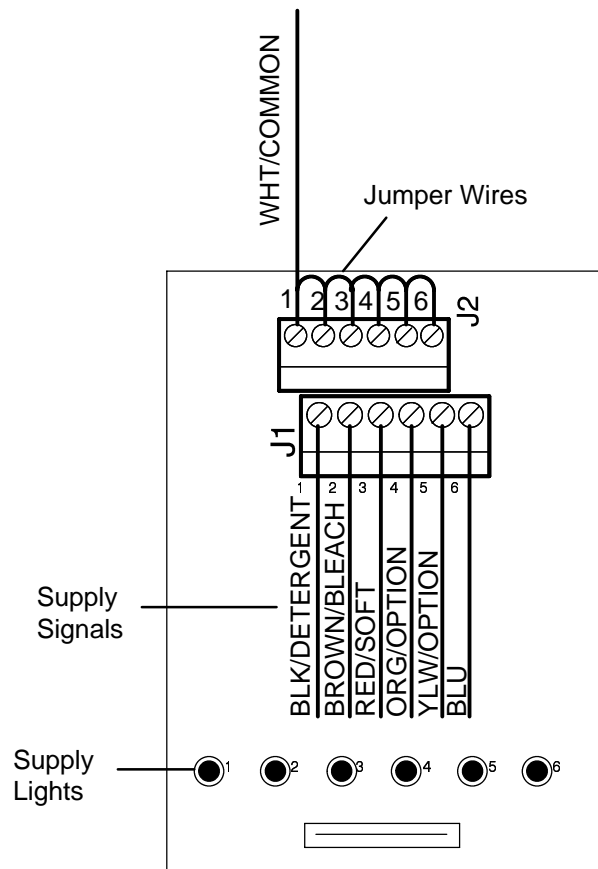
3.4.1 Networking Address Dip Switches

Refer to Figure 3-5 on page 3-8 for the Control Module dip switch settings for networking up to eight wash machines. These switches MUST BE set correctly, so that the system will run properly.

3.4.2 Microprocessor Mode

The Control Module has the ability to select formulas automatically. This feature is based on the duration of supply input number one. *Refer to 3.10.3.2 signals page 3-35.*

SUPPLY SIGNAL INPUT BOARD



NOTE: The supply signals, when activated, turn on the supply lights located at the bottom of the input board. Supply #1 is on the left and Supply #6 is on the right.

LEGEND

	SIGNAL J1	COMMON J2
Detergent	1	1
Bleach	2	2
Sour/Soft	3	3
Product #04	4	4
Product #05	5	5
Chart Stop #06	6	6

NOTE: Wash Machine signal commons can be run individually or shared as pre-wired.

Figure 3-4

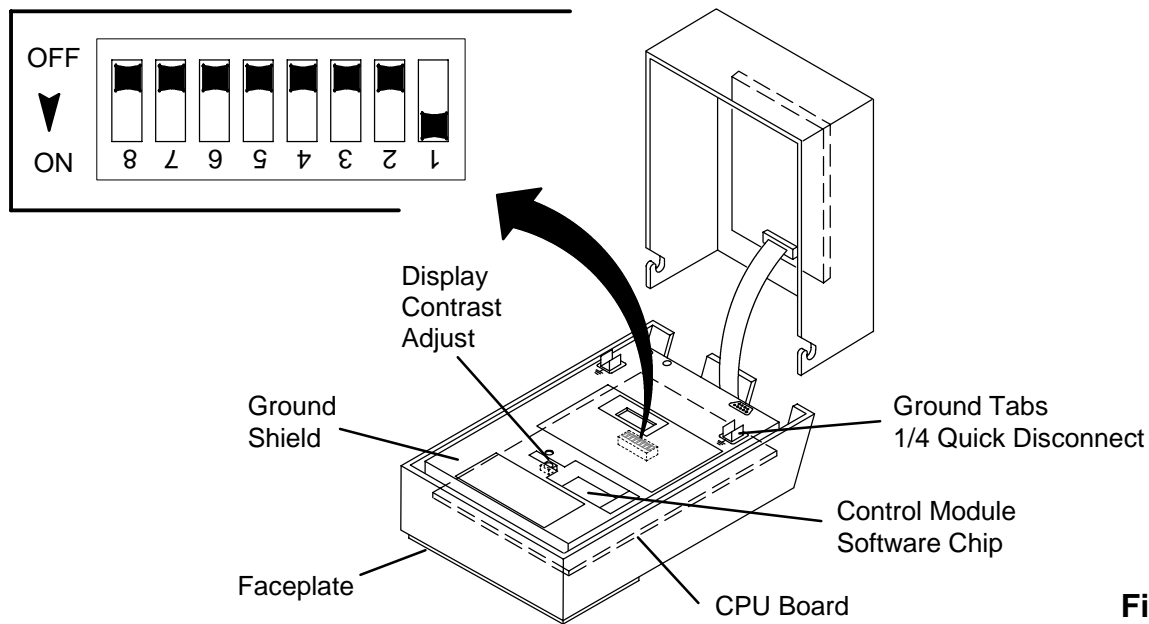
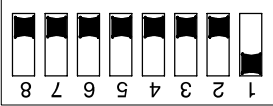
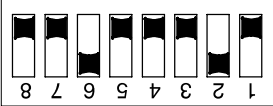
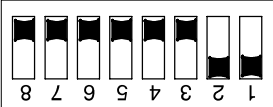

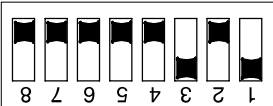
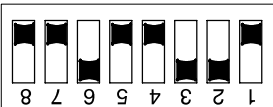




Figure 3-5

Control Module		Switch Number	This assigns . . .
Pump Cabinet 1	Wash Machine 1	OFF  ON	Switch 1 in ON. CRNet address to 1 as viewed by the display.
	Wash Machine 2	OFF  ON	Switches 2 and 6 are ON. CRNet address to 2 as viewed by the display.
Pump Cabinet 2	Wash Machine 1	OFF  ON	Switches 1 and 2 are ON. CRNet address to 3 as viewed by the display.
	Wash Machine 2	OFF  ON	Switches 3 and 6 are ON. CRNet address to 4 as viewed by the display.
Pump Cabinet 3	Wash Machine 1	OFF  ON	Switches 1 and 3 are ON. CRNet address to 5 as viewed by the display.
	Wash Machine 2	OFF  ON	Switches 2, 3, and 6 are ON. CRNet address to 6 as viewed by the display.
Pump Cabinet 4	Wash Machine 1	OFF  ON	Switches 1, 2, and 3 are ON. CRNet address to 7 as viewed by the display.
	Wash Machine 2	OFF  ON	Switches 4 and 6 are ON. CRNet address to 8 as viewed by the display.

3.5 Communications Cable

1. One of the connectors on the Communications Cable has a RED ARROW. This end must be plugged in at the Pump Cabinet.
2. Route one 20' communications cable from the bottom of the Control Module to one of the ports on the bottom side of the Pump Cabinet. The Communications Cable may be connected to either port (the Control Module identifies itself to the Pump Cabinet).
3. Open the Control Module cabinet.
4. Loosen the screws that hold down the cover plate over the CPU Board. Remove cover plate. This allows access to the dip switches.
5. Adjust the dip switches on the Control Module to correspond to wash machine #1 or #2. *Refer to Figure 3-5 on page 3-8.*
6. Replace the cover plate.
7. Close the Control Module cabinet.
8. Repeat the preceding instructions for wash machine #2.
9. Turn on the power at the Pump Cabinet.
10. Turn on the power to the wash machines.

3.6 Termination Connector

The Termination Connector," *refer to Figure 3-6*, **MUST BE** installed when only one wash machine is in use. This connector **MUST BE** plugged into either of the ports located on the bottom right-hand side of the Pump Cabinet. Tighten down the screws.

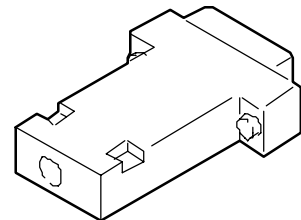


Figure 3-6

3.7 Keypad Functions

The following text provides an overview of the Control Module components (cable ports, display, and keypad).

NOTE: Paragraph numbers below refer to numbered items in Figure 3-7.

1. **CR• Net Cable Ports (2 each):** At these ports the 20' (6 meters) - CRNet cable will be installed. If two control modules are installed, route the CRNet cable between the two Control Modules. Either port will work. If the account has 3 or more control modules, route a CRNet cable between all control modules.

NOTE: An optional 50' (15 meters) Communications Cable is available. Refer to Section 7.1 - Dispenser Assembly, Front View on page 7-2.

2. **# and • (Pound and Period):** These two keys are used together to make the password [# • # <ENT>]. **This can only be entered from the Idle Screen.**
3. *** (Asterisk):** This key is the empty-capsule, alarm-reset key.
4. **EXT:** This is the Exit key.
 - a. This key is used by laundry employees to return the Control Module display back to the Idle Screen.
 - b. This key is used by the Territory Manager to exit from any position while in the program mode.
5. **HLP** - Displays the current revision of the software for this Control Module from the Idle Screen.
6. **0-9 (Numbers):**
 - a. Used by laundry employee to select formulas from the Idle Screen.
 - b. Used by Territory Manager to program the Control Module while in the program mode. Delay time in seconds, product amounts in grams, and pump on time in seconds for optional liquid products.
7. **↑ (Up) Arrow:**
 - a. Used by laundry employee to select formulas from the Idle Screen.
 - b. Used by Territory Manager to move to different lines in the Control Module while in the program mode.
 - c. Letter and number selection by the Territory Manager while in the program mode.
8. **↓ (Down) Arrow:**
 - a. Used by the laundry employees to select formulas from the Idle Screen.
 - b. Used by Territory Manager to move to different lines on the Control Module unit while in the program mode.
 - c. Letter and number selection by the Territory Manager while in the program mode.
9. **→ (Right) Arrow:** This key is used during the programming mode to move the flashing cursor to the right.
10. **← (Left) Arrow :** This key is used in the programming mode to move the flashing cursor to the left.

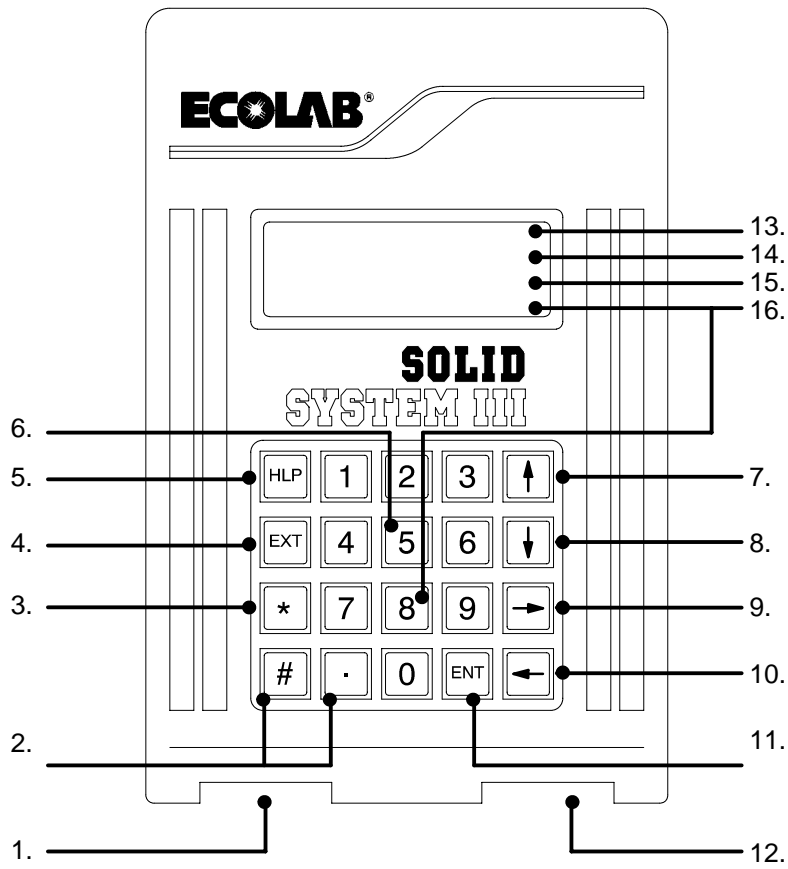


Figure 3-7

11. **ENT:** This is the Enter Key. This key is used by Territory Managers to 'ENTER' programmed data into the Control Module. During programming, the data **IS NOT** stored unless the 'ENTER' key is used.
12. **Communications Port:** This connection provides the communications link between the Control Module and the Pump Cabinet. Use the pre-assembled 20' (6 meter) cable between the Control Module and the Pump Cabinet.

13. Four line display screen (Running):

> 01 - SHEETS		
DISPENSING DETERGENT		
T:130	C:151	S:1

RUNNING DIAG ON"

> 01 - SHEETS		
DISPENSING DETERGENT		
COMPLETED		
0%	<div style="width: 100%; height: 10px; background-color: gray;"></div>	100%

RUNNING DIAG OFF"

14. **Four line display screen (Empty):**

01 - SHEETS FLUSHING DETERGENT EMPTY DETERGENT REPLACE/HIT * TO CLR
--

15. **Four line display screen (Idle):** Formula number 3 runs when a supply number 1 signal has been received. At this time the screen automatically shifts from Idle to Running.

01. SHEETS 02. TOWELS > 03. NO BLEACH 04. HEAVY SOIL

16. **Idle Screen with Load Counts:** Press Key #8 to provide Load Count Screen. Press <EXT> to exit back to Idle Screen.

01. SHEETS	0000
02. TOWELS	0000
> 03. NO BLEACH	0000
04. HEAVY SOIL	0000

3.8 Software Features

This system is capable of providing the Territory Manager with many new features for the Solid System III. This list of features has been implemented so that if a feature is not required then no programming is required to make the system operate. For example if the Consumption Report is not needed, there is no requirement to program any information about products. The system has been designed so that the only programming required is the programming necessary for the needs of the account. The system continues to dispense products for the appropriate formula while printouts are being generated. While the system is generating printouts, the user can exit back to the Idle Screen or status Screen to monitor the system. Some of the features described in this section include:

- Productivity Report
- Consumption Report
- Logdata Report
- Formula Setup Report
- Information Transfer
- Enhanced Formula Selector
- Improved Name Editors
- Programmable Password (**A must read section refer to Section 3.10.3.4**)
- SingleMachine and Multiple-Machine Reporting
- To and From Date Smart Memory

3.8.1 Productivity Report

The Productivity Report provides the customer detailed information about washroom efficiencies during a period of time. *Refer to Section 3.11.1 Productivity Report on page 3-42.*

3.8.2 Consumption Report

The Consumption Report provides the customer product inventory information based on the difference between current inventory and the inventory recorded from the previous visit. The difference is factored into an average cost to process soiled lines on a Per Patient Day (PPD) or Per Occupied Room (POR). *Refer to Section 3.11.4 Consumption Report on page 3-54.*

3.8.3 Logdata Report

The Logdata Report provides the Territory Manager a wash machine history log for a TM specified period of time. Date, time, formula number, product number, product amount and error codes are recorded on this report. *Refer to Section 3.11.2 Logdata Report on page 3-46.*

3.8.4 Formula Setup Report

The Formula Setup Report provides the customer an itemized list of each formula and product amounts programmed into the Control Module. *Refer to Section 3.11.3 Formula Setup Report on page 3-50.*

3.8.5 Information Transfer

If the CRNet cable has been installed, the system transfers all account-related programming information from one Control Module to another. The RECEIVE DATA IN request **MUST** take place from the keypad that requires the programming information. *Refer to Section 3.10.3.5.1 Receive Data In on page 3-37 for detailed instructions.*

3.8.6 Formula Selector

NOTE: The first time a brand new Pump Cabinet is turned on, all of the programmed values are zeros.

01. SHEETS DEFAULT
02. TOWELS DEFAULT
03. LINEN NO BLEACH
04. LINEN BLEACH
05. DEFAULT

3.8.7 Programmable Password

To program a password, *refer to Section 3.10.3.4 Password on page 3-37.*

3.8.8 Single and Multiple Pump Cabinet Reporting Features

The printouts have the capabilities to compile information from either a single machine or from multiple machines. When two Control Modules, or more, are linked together with a CRNet Cable, all printouts reflect all machines.

The **Productivity Report** printout reflects all formulas that have a name programmed. In the event that the two modules have the same formula name programmed, the printout reflects a compiled report on both formulas as one entry on the report. With the possibility of having 16 different formula names in each Control Module, the printout produces information for up to 32 different formulas. The order in which the names appear on the printout are all formulas from wash machine #1 and then all formulas from machine #2. The Washers" item on this report represent how many machines were used to generate the report. The 1 means that only one wash machine was used to compile the report, and the 2 represents two wash machines were used to compile the reports.

Requesting the **Logdata Report** results in printing the logdata for all Control Modules for the period entered. The printout identifies which wash machine the logdata is from by printing the machine number on the printout.

Requesting the **Setup Report** generates one Setup Report for each wash machine. The machine is identified by the wash machine number on the printout.

Requesting the **Consumption Report** generates a compiled report based on the total consumption of each product, that has a product name programmed, from both wash machines.

If it is required to generate a printout from only one wash machine, the CRNet cable that is connecting the two Control Modules together should be disconnected and the printer should be connected to the desired Control Module.

3.8.9 To and From Date Smart Memory Feature

When this system is installed and the time and date are programmed, the date is stored as the From Date for all associated printouts. When printouts are requested, the To Date is stored as the From Date for the next time that a printout is requested. The To Date always defaults to the current date. All printouts have there own From Date stored. This feature removes the need for the Territory Manager to remember when was the last date that a specific printout was requested.

EXAMPLE: The system is installed on 06-15-93. The time and date are programmed on that date. On 06-21-93 a printout is requested. The From Date is displayed as 06-15-93 and the To Date is displayed as 06-21-93. The next time that a printout is requested; the From Date displays as 06-21-93 and the To Date is the current date.

3.9 Screens Overview

3.9.1 General Information

When the system is powered up for the first time, the idle display screen reads:

Example (preprogrammed formulas):

>	01	SHEETS DEFAULT
	02	TOWELS DEFAULT
	03	LINEN NO BLEACH
	04	LINEN BLEACH

NOTE: The flashing > cursor located to the left of the formula number indicates the formula that will be used whenever there is a product supply signal. The formula selection can be changed by three methods:

1. Use the ↑ and ↓ keys located on the upper right hand side of the keypad.
2. Use the numbers 01, 02, 03 ... 16 located on the keypad. This automatically moves the cursor to the correct formula selection.
3. The Microprocessor Mode where the wash machine supply 1 (Detergent) request has a predetermined duration or on time, which automatically selects the formula on the Idle Screen.

3.9.1.1 Idle Screen

This screen displays the 16 programmable formula's available for use. To review all 16 formulas, use the ↑ and ↓ keys.

EXAMPLE:

01. SHEETS	Key ↑ Scroll Up ↓ Scroll Down
02. TOWELS	
> 03. NO BLEACH	
04. HEAVY SOIL	

3.9.1.2 Customer Load Counts

From the Idle Screen, the total number of loads run for each formula can be reviewed by pressing the number 8 on the keypad. The number of loads display on the right-hand side of the screen. To review all 16 formulas, use the ↑ and ↓ keys. The load count shown represents the total number of Solid Sour/Soft supply signals. After viewing the load counts, press the <EXT> key.

EXAMPLE:

01. SHEETS	0000	Key ↑ Scroll Up ↓ Scroll Down
02. TOWELS	0000	
> 03. NO BLEACH	0000	
04. HEAVY SOIL	0000	

NOTE: Always provide the Supply Signal #3 input for the purpose of counting loads and returning the Control Module screen from Running" to Idle."

NOTE: No product dispenses; however, you would still return the Running Screen" back to Idle Screen" and increment the load count by one.

EXAMPLE: FORMULA #10

> 10.MOPS AND RAGS
PRODUCT #03
DELAY 000 SECONDS
RUN 000 GRAMS

3.9.1.3 Running Formula

The Formula Running Screen displays the temperature, conductivity, and signal to the customer when the first machine signal is received. You can choose to display this information by choosing ON" or not to display by choosing OFF" when programming.

The display screen automatically shifts to the Running Screen when a Detergent signal #1 has been received). The Running Screen reads:

#01 SHEETS DEFAULT
WAITING

T:130 C: 000 S:0

#01 SHEETS DEFAULT
WAITING

COMPLETE

0% 100%

When Running Diag ON" is selected, this screen displays four lines of information which reads as follows:

EXAMPLE: (Running Diag On)

#01 - SHEETS
DISPENSING DETERGENT

T:130 C:151 S:1

DISPLAY EXPLANATION		
Line #1	#01-SHEETS	# 01, 02, 03 thru 16 depending on which selection has been made. This is the same information provided on the Idle Screen.
Line #2	DISPENSING DETERGENT	<p>Once a signal has been received, displays the Pump Cabinet activity. It provides one of the following pieces of information.</p> <p>The formula has been selected and the system is waiting for a supply signal. Once the signal is received, the display displays one of the following:</p> <ul style="list-style-type: none"> a. WAITING (Detergent, Bleach or Sour/Soft) - The Control Module is waiting for a wash machine signal. b. PENDING (Detergent, Bleach or Sour/Soft) - The amount of time programmed (000 to 99 sec) as delay time. It can also indicate a request for product was recognized. However, the Pump Cabinet is busy dispensing a product to the other wash machine. c. FLUSHING (Detergent, Bleach or Sour/Soft) - The Pump Cabinet has an automatic 40 second preflush for the Bleach and Sour/Soft. The Detergent has a 30 second preflush. d. DISPENSING (Detergent, Bleach or Sour/Soft) - The Pump Cabinet is now dispensing the programmed amount of product for the formula selected. e. FLUSHING (Detergent, Bleach or Sour/Soft) - Detergent and Bleach have a 30 second post flush and Sour/Soft has a 35 second post flush.

Line #3		Blank line, no information given.
Line #4	T:	This is the present water supply temperature in degrees Fahrenheit at the Pump Cabinet. The display is updated only when the Pump Cabinet is operating. The display, while in the WAITING" mode, locks on the water temperature recorded during the last operation.
	C:	A reference number that represents product flow rate as the product is being measured at the conductivity cell. The system has 3 scales with each scale having a operating range from 0 to 230. A number 100 on the display represents a smaller flow rate of product when compared to a number 210 within the same scale.
	S:	Supply signal 1, 2, 3, 4, 5, or 6 is shown whenever that signal is present. If two signals are ON at the same time, only the last signal is displayed.

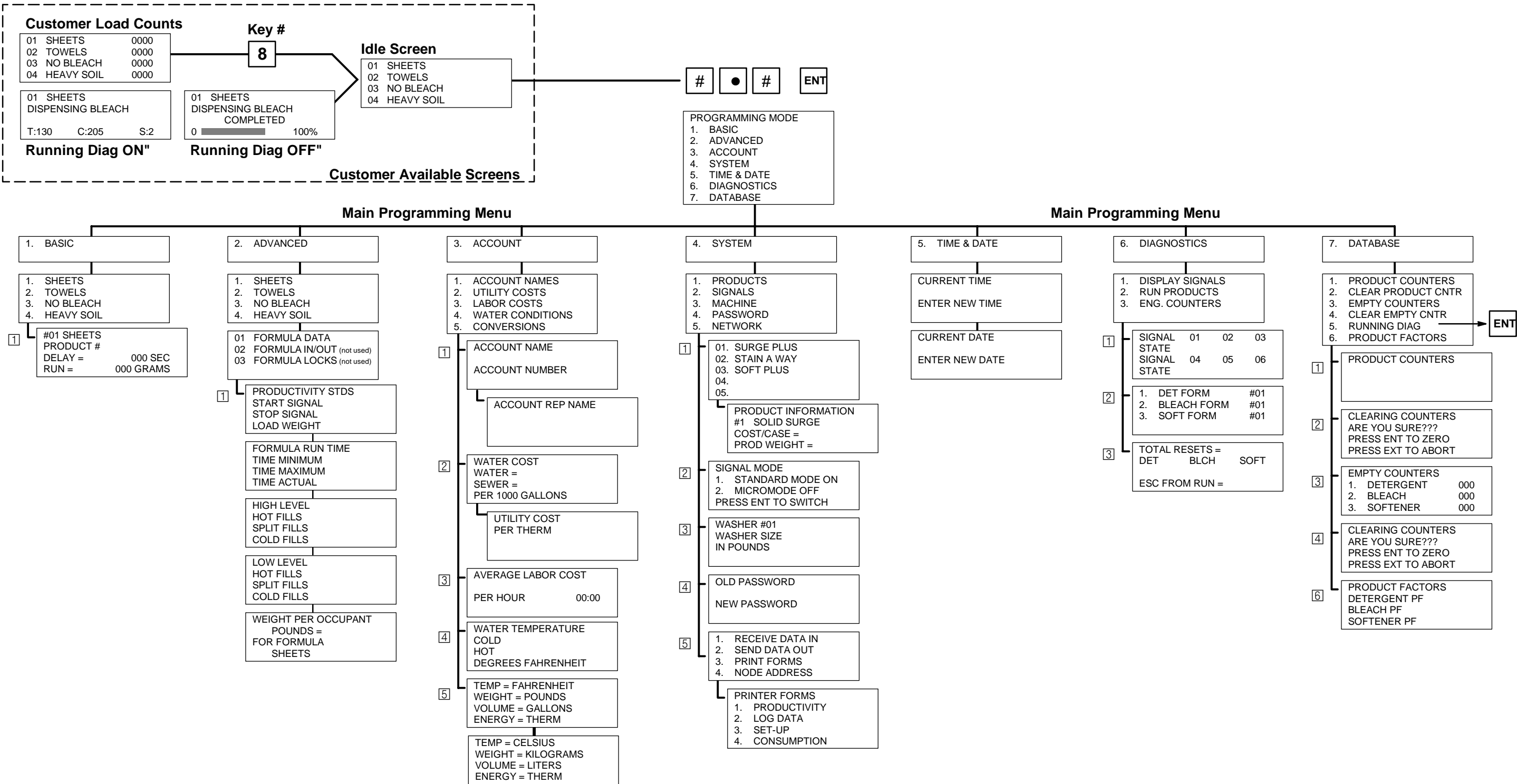
When Running Diag OFF" is selected, this screen displays four lines of information which read as follows:

EXAMPLE: (Running Diag Off)



DISPLAY EXPLANATION	
Line #1 Line #2	Provides the same information as the previous section Running Formula Screen (Running Diag ON").
Line #3 Line #4	Provides information on the progress of the Pump Cabinet by displaying a 0 to 100% completion bar graph.

3.9.1.4 Solid System III Programming Flow Chart



NOTE: Boxed numbers indicate sub-menu(s) for item number selected on main programming screen. For example, selecting "1. Display Signals" from 6. Diagnostics" presents the submenu referenced by a 1.

3.9.2 Basic Program Mode

3.9.2.1 Password Entry

To program the Control Module, press #●# and <ENT>. These two keys are located on the lower left corner of the keypad. **This password can only be used when the Formula Selection Idle Screen is displayed.** Refer to Section 3.10.3.4 Password on page 3-37.

When the password is entered the display screen reads, Programming Mode" and contains seven options to choose from as shown in Section 3.9.1.4 Programming Flow Chart on page 3-19.

EXAMPLE:

```
PROGRAM MODE
> 1. BASIC
   2. ADVANCED
   3. ACCOUNT
   4. SYSTEM
   5. TIME & DATE
   6. DIAGNOSTICS
   7. DATABASE
```

Make your programming mode selection by using the ↑ and ↓ keys to move the cursor to the correct mode. When the correct mode has been selected, press the <ENT> or enter key located in the lower right-hand corner of the keypad.

NOTE: If you choose not to do a Screen Edit at this time, proceed with programming the Control Module starting with Section 3.9.2 Basic Program Mode on this page.

3.9.2.2 Product/Formula Set-up

1. Select 1. BASIC". The screen now displays four formula selections from the Formula Selection Screen as indicated below. The display uses an * (asterisk) to indicate that you are in the Program Mode.

EXAMPLE: (formulas have been changed using Screen Edit"):

```
* 01. SHEETS
   02. LIGHT
   03. MEDIUM
   04. HEAVY
```

2. Select 01. Sheets" and press <ENT>. The display reads:

```
#01 SHEETS
PRODUCT #01
DELAY = 000 SECONDS
RUN = 030 GRAMS
```

DISPLAY EXPLANATION		
Line #1	#01 SHEETS	Formula #01 display can read up to 15 characters.
Line #2	PRODUCT #01	Product #01 is Detergent.
Line #3	DELAY	The amount of DELAY time after receiving a supply signal before turning on the Pump Cabinet.
Line #4	RUN	The amount of product programmed, in grams, to be dispensed with each supply signal.

-
3. To program information into the Control Module, use the ↑ and ↓ keys to move into the DELAY or RUN position.
 4. Use the → and ← keys to move into the correct position on the DELAY or RUN lines to program in the correct amount of DELAY seconds or RUN grams.

NOTE:

- a. **Maximum amount of programmable DELAY seconds or RUN grams is 999.**
- b. **The location of the flashing display cursor is the position ready to accept data.**

5. Use the keypad numbers 0 through 9 to program in the correct data. Press the <ENT> key to lock in the programmed amounts. The screen now has automatically shifted to Product #02. Product #02 is Bleach.
6. Program your DELAY seconds and RUN grams for Product #02. When Product #02 has been programmed, press <ENT>. The screen automatically shifts to Product #03. Product #03 is Sour/Soft.
7. Program your DELAY seconds and RUN grams for Product #03. When Product #03 has been programmed, press <ENT>. The screen automatically shifts to Product #04. Product #04 is an Optional Liquid product. The output to run a Tri-Star 300D Pump Cabinet has been provided.
8. Program your DELAY seconds and PUMP ON time in seconds. When Product #04 has been programmed, press <ENT>. The screen automatically shifts to Product #05. Product #05 is an Optional Liquid product. The output to run a Tri-star 300D Pump Cabinet has been provided.

NOTE:

- a. **A total of two optional outputs have been provided - both may go to one wash machine or one each to two wash machines.**
- b. **Optional liquid products are not dispensed through the Solid System III Pump Cabinet. Peristaltic pumps dispense this product directly to the wash machine through separate tubing.**

9. Program your DELAY and PUMP ON times in seconds for Product #05. When Product #05 has been programmed, press <ENT>. The screen automatically shifts to Input #06. Input #6 allows you to use the Chart Stop feature.
10. Press <ENT> to return to the Idle Screen.

3.9.2.2.1 Optional Liquids

The Pump Cabinet has two optional outputs to operate the Tri-Star 300D Pump Cabinet. If you have the Pump Cabinet delivering product to two wash machines, you may deliver one Optional Liquid product to each wash machine.

If the Pump Cabinet is only delivering product to one wash machine, then both of your optional liquid products could be delivered to that wash machine.

Optional liquid products are never flushed into the wash machine by the Pump Cabinet. *Refer to Section 2.5.1 Optional Liquids for more information.*

3.9.2.2.2 Chart Stop

Chart Stop allows you to program a delay time (how long you want the wash machine to run, after receiving the Chart Stop signal, before interrupting the wash machine timer) and a runtime (how long you want to extend the step). *Refer to Section 2.5.2 Chart Stop for more information.*

3.9.2.3 Screen Edit

To complete a Screen Edit follow the instructions below:

1. Select 1. Basic" and press <ENT>. The display reads:

* 01. SHEETS DEFAULT
02. TOWELS DEFAULT
03. LINEN NO BLEACH
04. LINEN BLEACH

NOTE: The * (asterisk) indicates you are able to edit the formula name.

The screen you are presently viewing may be edited to read anything you would like the Formula Selection Idle Screen to say, up to 15 characters in length.

2. Select a formula to edit by using the ↑ and ↓ keys to move the * in-line with a formula name you have elected to modify.
3. Press the → key.
4. The flashing letter may now be changed to any letter of the alphabet and the (') apostrophe or numbers 0 through 9 by using the ↑ and ↓ keys. The blank after the number 9 is a blank space between words.
5. Select a new letter or number, then use the → key to edit the next character (up to 15 characters).
6. It is not necessary to program in blanks" to the right of the cursor. When the <ENT> key is pressed, **it accepts all the characters to the left of and including the flashing cursor as new data.** If the <ENT> key is not used, the data is not changed.

NOTE: You may create a blank space between words or delete a character quickly by using the 9 and ↑ keys sequentially.

7. Repeat this process for the remaining 15 formulas, if applicable.
8. Press <EXT> when all formula names are complete.

3.9.3 Diagnostics

1. Select 6. DIAGNOSTICS" and press <ENT>. The display reads:

DIAGNOSTICS		
> 1.	DISPLAY SIGNALS	
2.	RUN PRODUCTS	
3.	ENG. COUNTERS	

3.9.3.1 Display Signals

2. Select 1. DISPLAY SIGNALS" and press <ENT>. The display reads:

SIGNAL 01	02	03
STATE		
SIGNAL 04	05	06
STATE		

The display shows you the state of the wash machine signals 1 through 6, OFF or ON. The Signal Input Board automatically adjusts from 24 to 240 VAC wash machine supply signals. From this screen you can see if wash machine signals are ON or OFF. This feature can be used at the time of installation or for troubleshooting purposes in the future. When you view the supply signal inputs, the Pump Cabinet **WILL NOT** operate in this mode.

3. Press <EXT> when the current state of the Input Signals has been reviewed.

3.9.3.2 Run Products

4. Select 2. RUN PRODUCTS" and press <ENT>.

NOTE: The formula number is the same formula selected on the Idle Screen when you entered the password.

EXAMPLE: From the Idle Screen, select Formula #10. Enter the password, Formula #10 product amounts dispense, which can be run manually. The display reads:

> 1. DET FORM.	#10
2. BLCH FORM.	#10
3. SOUR/SOFT FORM.	#10

From this screen you may run any of the three products. The Pump Cabinet runs the delay and amount of product programmed for the formula that has been selected.

NOTE: Manual operation of the Pump Cabinet also increments the product load counter for that formula.

- a. Use the ↑ and ↓ keys to select a product.
- b. Press <ENT> to run the product selected. The Pump Cabinet includes the DELAY time programmed for that product and level.
- c. Press the <EXT> button three times to return to the Idle Screen. Then press <ENT> to view the Pump Cabinet operation.

3.9.3.3 ENG Counters

This menu selection is for a future feature and is not currently used.

3.9.4 Database

1. Select 7. DATABASE" and press <ENT>. The display will read:

> 1. PRODUCT COUNTERS
2. CLEAR PRODUCT CNTR
3. EMPTY COUNTERS
4. CLEAR EMPTY CNTR
5. RUNNING DIAG
6. PRODUCT FACTORS

3.9.4.1 Product Counters

1. Select 1. PRODUCT COUNTERS" and press <ENT>. Use the ↑ and ↓ keys to review all 16 formulas.
 - a. The screen displays Detergent feeds (DET) for all 16 formula selections.
 - b. Press <ENT>. The screen displays Bleach feeds (BLCH) for all 16 formula selections.
 - c. Press <ENT>. The screen displays Sour/Soft feeds for all 16 formula selections.
 - d. Press <ENT>. The screen displays OPT 1 (Optional Liquid product #1) feeds for all 16 formula selections
 - e. Press <ENT>. The screen displays OPT 2 (Optional Liquid product #2) feeds for all 16 formula selections.
 - f. Press <ENT> to scroll through all three solid products and both of the Optional Liquids again or press the <EXT> key to return to the Data Information menu.

3.9.4.2 Clear Product Counters

1. Select 2. CLEAR PRODUCT CNTR" and press <ENT>. The display reads:

Flashing
Cursor →

CLEAR PRODUCT CNTR
ARE YOU SURE ???
PRESS ENT TO ZERO
PRESS EXT TO ABORT

- a. You must make a selection at this time. Pressing the <ENT> key resets all product counters back to ZERO and returns you to the Data Information screen. **This also clears all logdata from the memory.**
- b. Pressing the <EXT> key will abort this step and return you to the Data Information Screen.

3.9.4.3 Empty Counters

1. Select 3. EMPTY COUNTERS" and press <ENT>. The screen reads:

EMPTY COUNTERS
1. DETERGENT XXX
2. BLEACH XXX
3. SOUR/SOFT XXX

- a. The screen displays the product and the number of empty capsule alarms.
- b. Press the <EXT> key to return to the Data Information screen.

3.9.4.4 Clear Empty Counters

1. Select 4. CLEAR EMPTY CNTR" and press <ENT>. The screen reads:

Flashing
Cursor →

CLEARING COUNTERS
ARE YOU SURE ???
PRESS ENT TO ZERO
PRESS EXT TO ABORT

- a. You must make a selection at this time. Pressing the <ENT> key resets all empty counters back to ZERO and returns you to the Data Information screen.
- b. Pressing the <EXT> key aborts this step and returns you to the Data Information screen.

3.9.4.5 Running Diagnostics

1. Select 5. RUNNING DIAG" and press <ENT>.
 - a. Pressing the <ENT> key toggles between having this function ON or OFF. *Refer to Section 3.9.1.4 Programming Flow Chart on page 3-19.*

3.9.4.6 Product Factors

1. Select 6. PRODUCT FACTORS" and press <ENT>. Product Factor values will be set by the Territory Manager based on which types of solid products will be dispensed through the Pump Cabinet, refer to the Product Information Package. The display screen reads:

PRODUCT FACTORS
DETERGENT PF 150
BLEACH PF 100
SOUR/SOFT PF 095

- a. Use the Keypad numbers 0 through 9 to program in the correct data. Press the <ENT> key to lock in the programmed amounts.
- b. When the Product factors have been entered, all Programming has been completed. Press <EXT> three times to return to the Formula Selection Idle Screen.

3.10 Printer Programming

This section provides the procedures required to set up the Control Module for the printing function. A sample worksheet is provided in Section 8.0, Appendices. This information is programmed for each formula selection (1-16).

3.10.1 Advanced

1. Select 2. ADVANCED" and press <ENT>. The screen will display four formula selections from the formula selection screen as indicated below. The display will use an * (asterisk) which now indicates that you are in the Advanced Program Mode.

```
* 01. SHEETS
  02. TOWEL
  03. NO BLEACH
  04. HEAVY SOIL
```

1. Select 01. SHEETS" and press <ENT>. The display reads:

```
ADVANCED PROGRAM
* 1. FORMULA DATA
  2. FORMULA IN/OUT
  3. FORMULA LOCKS
```

NOTE: Formula In/Out" and Formula Locks" are not used with this application.

3.10.1.1 Formula Data

1. Select *1. FORMULA DATA" and press <ENT>. This information MUST BE programmed for each formula. The display reads:

```
PRODUCTIVITY STDS
START SIGNAL #01
STOP SIGNAL #03
LOAD WEIGHT 090 LB
```

DISPLAY EXPLANATION		
Line #1	PRODUCTIVITY STANDARDS	This is a formula runtime established by the Territory Manager. The Pump Cabinet has a built in time clock which can be used to monitor the amount of time between a start and stop signal. This time is programmable for all 16 formulas.
Line #2	START SIGNAL #01	This is the Detergent supply signal. When supply #01 has been requested, the internal timer starts to monitor formula operation.
Line #3	STOP SIGNAL #03	This is the Sour/Soft supply signal. When Supply #03 has been requested, the internal timer stops and documents the time between the start and stop signals.
Line #4	LOAD WEIGHT #255 LB	This is the load capacity of the wash machine for this formula up to 999 pounds.

- a. When the correct START and STOP signals along with the wash machine capacity have been programmed, press <ENT>. The display reads:

FORMULA RUNTIME	
TIME MINIMUM:	XX
TIME MAXIMUM:	XX
TIME ACTUAL:	XX

DISPLAY EXPLANATION		
Line #1	FORMULA RUNTIME	This is an estimated amount of formula runtime between the start and stop signals previously programmed. (Remember wash machine timers and Control Modules typically do not advance while the wash machine is filling to its programmed level.)
Line #2	TIME MINIMUM	Programmable up to 99 minutes. This is the minimum amount of time required between the START and STOP signal for the completion of this formula.
Line #3	TIME MAXIMUM	Programmable up to 99 minutes. This is the maximum amount of time required between the START and STOP signal for the completion of this formula.
Line #4	TIME ACTUAL	Programmable up to 99 minutes. This is the actual amount of time required between the START and STOP signals.

- b. When the correct minimum, maximum, and actual times have been programmed, press <ENT>. The display reads:

HIGH LEVEL	= XX
HOT FILLS	= XX
SPLIT FILLS	= XX
COLD FILLS	= XX

DISPLAY EXPLANATION		
Line #1	HIGH LEVEL	This is an estimate of the gallons of water required to bring the wash machine to a High Level one time for this formula. Programmable up to 99 gallons.
Line #2	HOT FILLS	This is the number of times that during this formula the wash machine will be brought to a Hot Fill at High Level. Programmable up to 99 times.
Line #3	SPLIT FILLS	This is the number of times that during this formula the wash machine will be brought to a Split Fill at High Level. Programmable up 99 times.
Line #4	COLD FILLS	This is the number of times that during this formula the wash machine will be brought to a cold fill at the High Level. Programmable up to 99 times.

- c. When the High Level gallons, Hot Fills, Split Fills, and Cold Fills have been programmed, press <ENT>. The display reads:

LOW LEVEL	= XX
HOT FILLS	= XX
SPLIT FILLS	= XX
COLD FILLS	= XX

DISPLAY EXPLANATION		
Line #1	LOW LEVEL	This is an estimate of the gallons of water required to bring the wash machine to a Low Level one time for this formula. Programmable up to 99 gallons.
Line #2	HOT FILLS	This is the number of times that during this formula the wash machine will be brought to a Hot Fill at Low Level. Programmable up to 99 times.
Line #3	SPLIT FILLS	This is the number of times that during this formula the wash machine will be brought to a Split Fill at Low Level. Programmable up to 99 times.
Line #4	COLD FILLS	This is the number of times that during this formula the wash machine will be brought to a Cold Fill at the Low Level. Programmable up to 99 times.

- d. When the Low Level Gallons, Hot Fills, Split Fills, and Cold Fills have been programmed, press <ENT>. The display reads:

WEIGHT PER OCCUPANT POUNDS = XX.X FOR FORMULA #01 SHEETS

DISPLAY EXPLANATION		
Lines #1&2	WEIGHT PER OCCUPANT POUNDS=XX.X	This is an estimate of the weight of linen per occupant that will be soiled for this linen classification.
Lines #3&4	FOR FORMULA #01 SHEETS	Pounds per Occupant applies to Formula #01 Sheets only (soiled).

- e. When the Weight Per Occupant data has been completed, press <ENT>. The display returns to production standard. This formula has been completed, press <EXT> key twice.
- f. Select a new formula and press <ENT> key twice to complete another formula.
- g. Complete this data for all 16 formulas.
- h. **Formula IN/OUT** is not used in this application.
- i. **Formula Locks** is not used for this application.
- j. The Advanced Program menu has been completed. Press the <EXT> key to exit this menu.

3.10.2 Account

1. Select 3. ACCOUNT" and press <ENT>. Use the ↑ and ↓ keys to select one of the five selections available in the Account menu. The display reads:

```
> 1. ACCOUNT NAME
   2. UTILITY COSTS
   3. LABOR COSTS
   4. WATER CONDITIONS
   5. CONVERSIONS
```

3.10.2.1 Account Name

1. Select 1. ACCOUNT NAME" and press <ENT>. The display will read:

Flashing
Cursor →

```
ACCOUNT NAME
ACCT NAME
ACCOUNT NUMBER
ACCT #
```

DISPLAY EXPLANATION

Line #2	ACCOUNT NAME	<p>Programmable up to 20 characters in length.</p> <ol style="list-style-type: none">a. The flashing letter may now be changed to any letter of the alphabet and the ' ' (apostrophe) or numbers 0 through 9 by using the ↑ or ↓ keys. A blank space after the number 9 is used between words.b. Use the → key to program the next character.c. You MUST delete any unwanted characters by using the 9 and ↑ keys in sequence.d. When the Account Name has been programmed correctly, press <ENT>.
Line #4	ACCOUNT NUMBER	<p>Programmable up to 20 characters in length.</p> <ol style="list-style-type: none">a. The flashing number may now be changed to any number 0 through 9. To change the numbers you may use the ↑ or ↓ keys or you may use the keypad numbers 0 through 9.b. Use the → arrow key to program the next character.c. You must delete any unwanted characters by using the 9 and ↑ keys in sequence.

- a. When the Account Number has been programmed correctly press <ENT>. The display reads:

<p>ACCOUNT REP NAME REP NAME</p>

DISPLAY EXPLANATION		
Line #2	ACCOUNT REP NAME	<p>Enter your name on this line. Programmable up to 20 characters in length.</p> <p>a. The flashing letter may now be changed to any letter of the alphabet and the ' ' (apostrophe) or numbers 0 through 9 by using the ↑ or ↓ keys. A blank space after the number 9 is used between words. To delete any unwanted characters, use the 9 and ↑ keys in sequence.</p> <p>b. You must delete any unwanted characters by using 9 and the ↑ keys in sequence.</p>

- b. When the Account Rep Name has been programmed correctly press <ENT>. The display returns to Account Name and Account Number. When this menu has been completed, press <EXT>.

3.10.2.2 Utility Costs

1. Select 2. UTILITY COSTS" and press <ENT>. The display reads:

<p>WATER COST WATER= XX.XX SEWER= XX.XX PER 1000 GALLONS</p>

NOTE: **You cannot cursor to the right or down until the space where the cursor is flashing has been programmed.**

DISPLAY EXPLANATION		
Line #2	WATER COST	The cost of city water per 1000 gallons.
Line #3	SEWER COST	<p>The cost of sewer usage per 1000 gallons</p> <p>a. Program in the cost of fresh water and sewer usage with the number keypad. Use the dot (●) to establish a decimal.</p>

- a. Press the <ENT> key to store new data.
- b. When this screen has been programmed, press <EXT>.

3.10.2.3 Labor Costs

1. Select 3. LABOR COSTS" and press <ENT>. The display reads:

AVERAGE COSTS	LABOR
PER HOUR	00.00

NOTE: You cannot cursor to the right until the space where the cursor is flashing has been programmed.

DISPLAY EXPLANATION		
Line #1	AVERAGE LABOR COSTS	This is an estimate of the average wage per hour for production employee's.
Line #2	(blank)	
Line #3	PER HOUR	Program in the wages per hour using the number keypad. Use the dot (•) to establish a decimal.
Line #4	(blank)	

- a. Press the <ENT> key to store new data.
- b. When this screen has been programmed, press <EXT>.

3.10.2.4 Water Conditions

1. Select 4. WATER CONDITIONS" and press <ENT>. The display reads:

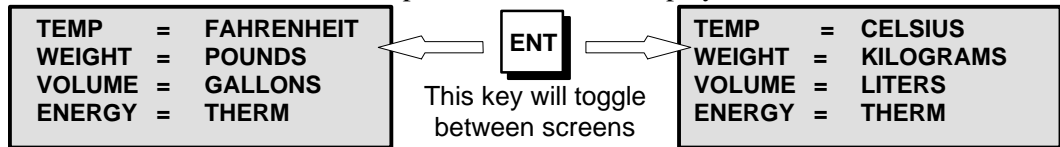
WATER TEMPERATURE
COLD TEMP = 000
HOT TEMP = 000
DEGREES FAHRENHEIT

DISPLAY EXPLANATION		
Line #1	WATER TEMPERATURE	This provides the current HOT and COLD water supply temperature at this account.
Line #2	COLD TEMP.	Program the COLD water supply temperature.
Line #3	HOT TEMP.	Programs the HOT water supply temperature.
Line #4	DEGREES FAHRENHEIT	This temperature display is available in either standard or metric conversions.

- a. Press the <ENT> key to store new data.
- b. When this screen has been programmed, press <EXT>.

3.10.2.5 Conversions

1. Select 5. "CONVERSIONS" and press <ENT>. The display reads:



DISPLAY EXPLANATION - STANDARD U.S. MEASUREMENT

Line #1	TEMP =	Temperatures on printouts will be in degrees Fahrenheit.
Line #2	WEIGHT =	All load weights will be in pounds
Line #3	VOLUME =	All printouts will be in gallons.
Line #4	ENERGY =	All printouts will be in therms. NOTE: 100,000 BTU's equals one therm.

DISPLAY EXPLANATION - METRIC

Line #1	TEMP =	Temperatures on printouts will be in degrees Celsius.
Line #2	WEIGHT =	All load weights will be in kilograms.
Line #3	VOLUME =	All printouts will be in liters.
Line #4	ENERGY =	All printouts will be in therms.

- a. When this screen has been programmed, press <EXT>.
- b. When the ACCOUNT" menu has been completed, press <EXT> to exit.

3.10.3 System

1. Select 4. SYSTEM" and press <ENT>. Use the ↑ and ↓ keys to select one of the five selections available in the System menu. The display reads:

```
SYSTEM PROGRAMMING
> 1. PRODUCTS
  2. INPUTS
  3. MACHINE
  4. PASSWORD
  5. NETWORK
```

2. Select 1. PRODUCTS" and press <ENT>. The display reads:

```
* 01 SURGE PLUS
   02 STAIN A WAY
   03 SOFT PLUS
   04
   05
   06 CHART STOP
```

The System Programming Products menu allows the Territory Manager to program the names of the products being used at the account. These product names appear on the Consumption Report.

DISPLAY EXPLANATION		
Line #1	PRODUCT #01	This defaults to Surge Plus; however, Ultra Surge and Ultra Surge NP (non-phosphate) products can be programmed.
Line #2	PRODUCT #02	This defaults to Stain-A-Way. Stain-A-Way NP (non-phosphate) products can be programmed.
Line #3	PRODUCT #03	This defaults to Soft Plus. However, Neutralizer can be programmed.
Lines #4 and #5	PRODUCT #04 & #05	These are liquids which are available through the use of optional outputs. Any liquid can be pumped and spelled out up to 15 characters.
Line #6	CHART STOP	

3.10.3.1 Products

To complete a Product screen edit, follow the instructions below;

```
* 01. SURGE PLUS
   02. STAIN A WAY
   03. SOFT PLUS
   04.
   05.
   06 CHART STOP
```

NOTE: The * (asterisk) indicates you are in the Program Mode.

The screen you are presently viewing may be edited to read any product name, up to 15 characters in length.

1. Select a product to edit by using the ↑ and ↓ keys to move the * in-line with a product name you have elected to modify.
2. Press the → key.
3. The flashing letter may now be changed to any letter of the alphabet and the (') apostrophe or numbers 0 through 9 by using the ↑ and ↓ keys. The blank after the number 9 is a blank space between words.

4. Select a new letter or number, then use the → arrow key to edit the next character (up to 15 characters).

NOTE: You may create a blank space between words or delete a character quickly by using the 9 and ↑ keys sequentially.

5. Remove any unwanted characters in each line.
6. When the correct product name's have been programmed, press <ENT>. The display reads:

PRODUCT INFORMATION #01 SURGE PLUS COST/CASE = XXX.XX PROD WEIGHT = XXXX

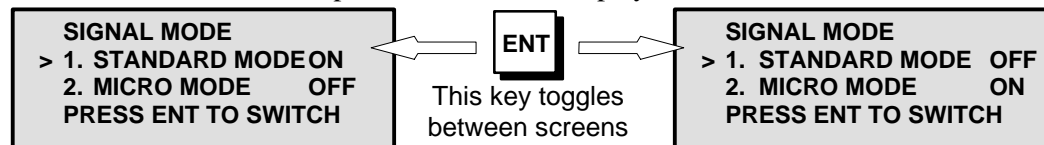
DISPLAY EXPLANATION		
Line #1	PRODUCT INFORMATION	This is the programmed product information which is used for calculations on the Consumption Report.
Line #2	#01 SURGE PLUS	This is the programmed product name that is used on the Consumption Report.
Line #3	COST/CASE = XXX.XX	This is the Cost/Case of the product listed on Line 2 of the display.
Line #4	PROD WEIGHT	This is the programmed product weight per case of the product listed on Line 2 of the display.

PRODUCT INFORMATION GUIDE	
Product	Product Weight Per Case
Surge Plus (P OR NP)	36 lbs.
Ultra Surge (P OR NP)	32 lbs.
Stain A Way	8 lbs.
Soft Plus	12 lbs.
Neutralizer	12 lbs.

7. Use the numbered keys and the decimal point on the Keypad to program in the product costs and weights. The flashing cursor automatically advances to the next character.
8. When the information on this screen is correct, press the <ENT> key. The screen automatically returns to the Product Selection screen.
9. Move the * by using the ↑ and ↓ keys to complete the Product Information for all three solid products and two Optional Liquids.
10. Optional Liquids, #04 and #05, are programmed as container volume (gallons). Pump size is programmed in ounces per minute, i.e. 5, 10, 20, 40 ounces per minute.
11. When all products have been programmed, press the <EXT> key from the Product Selection screen.

3.10.3.2 Signals

1. Select 2. SIGNALS" and press <ENT>. The display reads:



DISPLAY EXPLANATION		
Line #1	SIGNAL MODE	Territory Manager has the choice of the operator selecting the formulas or in the case of a microprocessor wash machine, you can have the wash machine select the formulas automatically.
Lines #2&3	STANDARD MODE (ON or OFF)	Standard Mode ON - Formula Selection at the Control Module is selected by the account personnel. Micro Mode OFF
Lines #2&3	MICRO MODE (ON or OFF)	Standard Mode OFF Micro Mode ON - Formula selection at the Control Module is automatically made by the microprocessor wash machine.
Line #4	PRESS ENT TO SWITCH	Use the <ENT> key to toggle the Input Signal Mode to turn the the Micro Mode ON or OFF.

NOTE: DO NOT make a Standard or Micro Mode selection if the wash machine program has been started.

NOTE: This applies to microprocessor controlled wash machines ONLY!

1. To provide automatic operation of the Control Module, the Control Module Supply 1 Input Signal (Detergent) must be programmed. The wash machine supply input signal (Detergent) for each formula is controlled and programmed for the following duration.
 - a. Supply 1 Duration (in seconds) = (Control Module Formula Number \times 2) + 1
2. On microprocessor washers the duration of the washer output supply signal is programmable in seconds.
3. The first supply output for each formula (detergent) will be programmed and wired to input number 1 at the Control Module input board.
4. Washer supply output duration will be programmed in seconds. To automatically select formula's at the Control Module. Control the duration of the washer output at Control Module input number 1.
 - a. Supply Input Number 1 Duration (in seconds) = (Control Module Formula Number \times 2) + 1

EXAMPLE: To automatically select formula number 9 (diapers). Program the washer output signal at the Control Module Number 1 input for a duration of 19 seconds. $(9 \times 2) + 1 = 19$

5. Always program a washer output for input Number 3 (Solid Soft Plus or Neutralizer). This input is used to terminate the Formula, count the load and reset the Control Module.

NOTE: Always send the softener/neutralizer signal even if the product value is zero.

1. The system must be reset before it will recognize a new Formula selection.

2. Do not trigger multiple signals at the Control Module Input Board. Input Number 1 must be activated independently for the system to select formulas correctly.

EXAMPLE: A combination suds/bleach input Numbers 1 and 2 cannot be wired together off of one wash machine output.

FORMULA EXAMPLES	
Control Module Formula	Input Supply 1 ON time (secs.)
1. SHEETS	3
2. TOWELS	5
3. NO BLEACH	7
4. HEAVY SOIL	9
5. KITCHEN RAGS	11
6. MOPS	13
7. RUGS	15
8. PADS	17
9. DIAPERS	19
10. RED NAPKINS	21
11. WHITE NAPKINS	23
12. SPREADS	25
13. BAR TOWELS	27
14. CURTAINS	29
15. REWASH	31
16. STAINS	33

- a. When the Micro Mode has been selected ON or OFF, press the <EXT> key.

3.10.3.3 Machine

1. Select 3. MACHINE" and press <ENT>. The display reads:

WASHER #01
WASH SIZE XXX
IN POUNDS

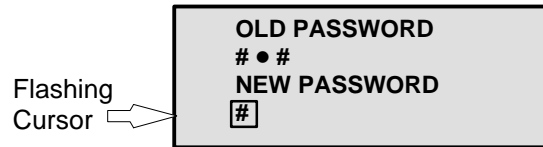
DISPLAY EXPLANATION		
Line #1	WASHER #01	This is the Control Module address assigned by the position of the dip switches in the Control Module.
Line #2	WASHER SIZE XXX	This is the wash machine load capacity. Programmable up to 3 digits.
Line #3	IN POUNDS or KILOGRAMS	The information listed is based on the Territory Managers selection of Standard U.S. Measurement or Metric.

- a. When the Machine Menu has been completed, press the <EXT> key.

3.10.3.4 Password

1. Select 4. PASSWORD" and press <ENT>. The display reads:

NOTE: If the version of software is greater than 0.400 (as displayed when pressing the <HLP> key on the Idle Screen Display), the default password is # ● # <ENT>.



DISPLAY EXPLANATION		
Line #1	OLD PASSWORD	Lines 1 and 2 display the current password for this Control Module.
Line #2	# ● #	
Line #3	NEW PASSWORD	Use the number keypad to enter your new password. The flashing cursor advances automatically to the next character. When the new password has been established, press the <ENT> key.
Line #4	# □	

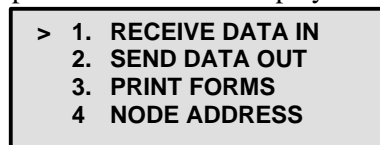
NOTE: When the <ENT> key is pressed, the screen automatically updates the old password with the new password.

NOTE: All passwords start with the pound (#) symbol and must be a minimum of ONE character. We suggest that a password be a maximum of SIX characters. Always use the <ENT> key after the password has been entered to access the Programming Mode.

- a. Press the <EXT> key to exit from this menu.

3.10.3.5 Network

1. Select 5. NETWORK" and press <ENT>. The display reads:



3.10.3.5.1 Receive Data In

2. Select 1. RECEIVE DATA IN" and press <ENT>. If the CRNet Cable has been installed, the system transfers all account related programming information from one Control Module to another. The RECEIVE DATA IN request must take place from the keypad that requires programming information. Please wait for the message **1. RECEIVE DATA IN DONE**" to complete the copy process.

EXAMPLE: The Control Module from wash machine #1 has been completely programmed. All account related information can be copied to Control Module 2 from the keypad.

- a. When you're finished with Receive Data In, press <EXT>.

Account related information is as follows:

- Idle Screen Formula Names
- Advanced Formula Data
- Account Name
- Account Number
- Account Rep name
- Utility Costs
- Labor Costs
- Water Conditions
- Conversions
- Product Information

3.10.3.5.2 Send Data Out

Select 2. SEND DATA OUT" (Not Used)

3.10.3.5.3 Print Forms

1. Select 3. PRINT FORMS" and press <ENT>. The display reads:

```
PRINTER FORMS
> 1. PRODUCTIVITY
  2. LOGDATA
  3. SET-UP
  4. CONSUMPTION
```

NOTE: Refer to Section 3.11 Printer Reports for quick access and additional information to these printouts.

NOTE: Refer to Section 4.3 Printer Module Installation if the Printer and Printer Module are not connected.

2. Select 1. PRODUCTIVITY" and press <ENT>. The display reads:

```
DATE FROM
DATE TO
DAILY OCCUP 00000
LABOR HOURS 00000
```

DISPLAY EXPLANATION		
Line #1	DATE FROM	The DATE FROM automatically becomes the date of the last productivity form printout request.
Line #2	DATE TO	Defaults to today's date.
Line #3	TOTAL OCCUP	This is the number of occupied beds in a health care account or the number of occupied rooms in hospitality during a period of time. Established on Lines 1 and 2, program this number in.
Line #4	LABOR HOURS	This is the number of labor hours worked during the DATE FROM and the DATE TO programmed on Lines 1 and 2, program this number in.

- a. The Territory Manager may request any timeframe for printout and review.
- b. When all requested information has been completed, press <ENT>.

NOTE: The status of the printout is displayed.

- c. When printout is completed, press <EXT>.
3. Select 2. LOGDATA" and press <ENT>. The display reads:

DATE FROM
DATE TO

DISPLAY EXPLANATION

Line #1	DATE FROM	The DATE FROM automatically become the date of the last Logdata form printout request.
Line #2	DATE TO	Defaults to today's date.

- a. The Territory Manager may request any timeframe for printout and review.
- b. When all requested information has been completed, press <ENT>.
- c. When printout is completed, press <EXT>.
4. Select 3. SET UP" and press <ENT>. The display reads:

FILE STATUS

PRINTER QUE LOADED

NOTE: The Setup Report prints all programmed account information on the preprinted Setup Report form.

NOTE: Refer to Section 4.3 Printer Module Installation if the printer and Printer Module are not connected.

5. Select 4. CONSUMPTION" and press <ENT>. The display reads:

DATE FROM
DATE TO
PATIENT DAYS 00000
OCCUPIED RMS 00000

NOTE: The Consumption Report prints on the preprinted Consumption Report form.

NOTE: Refer to Section 4.3 Printer Module Installation if the Printer and Printer Module are not connected.

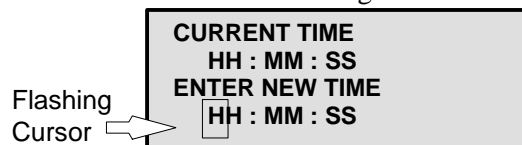
- a. The Territory Manager may request any time frame for printout and review.
- b. When all requested information has been completed, press <ENT>.
- c. When printout is completed, press <EXT>.

3.10.3.5.4 Node Address

6. Select 4. NODE ADDRESS," 01 or 02. The Node Address for the Control Module is established by the dip switch settings. *Refer to Figure 3-5 on Page 3-8.*

3.10.4 Time & Date

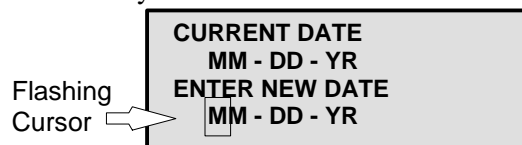
1. Select 5. "TIME & DATE" from the Program menu and press <ENT>. The display reads:



DISPLAY EXPLANATION

Line #1	CURRENT TIME	Programmed current time of day. All new systems require the clock to be programmed.
Line #2	HH : MM : SS	
Line #3	ENTER NEW TIME	Using the numbered keypad (0 through 9) and program in the current time in hours (HH), minutes(MM) and seconds (SS). Time is entered in 24-hour format.
Line #4	HH : MM : SS	

2. Press the <ENT> key when the correct time has been programmed. The display reads:



DISPLAY EXPLANATION

Line #1	CURRENT DATE	Programmed current month (MM), date (DD), and year (YR).
Line #2	MM - DD - YR	
Line #3	ENTER NEW DATE	Using the numbered keypad (0 through 9) program in the current date in month (MM), date (DD), and year (YR).
Line #4	MM - DD - YR	

3. Press the <ENT> key when the correct date has been programmed.
4. Press the <EXT> key once.

3.11 Printer Reports

This section contains a quick-reference information for printing reports. In addition, sample reports and explanatory information are included for the following reports:

- Productivity
- Logdata
- Formula Setup
- Consumption with Printout
- Consumption without Printout

A Notes section has been provided at the end of each report section for any reference information that you would like save.

The last page of this section contains a table with Capsule/Case Portion Information.


```
graph TD; A[IDLE SCREEN] --> B[PROGRAM MODE<br/>1. BASIC<br/>2. ADVANCED<br/>3. ACCOUNT<br/>4. SYSTEM]; B --> C[SYSTEM PROGRAMMING<br/>1. PRODUCTS<br/>2. SIGNALS<br/>3. MACHINE INFO<br/>4. PASSWORD<br/>5. NETWORK]; C --> D[1. RECEIVE DATA IN<br/>2. SEND DATA OUT<br/>3. PRINT FORMS<br/>4. NODE ADDRESS]; D --> E[PRINTER FORMS<br/>1. PRODUCTIVITY<br/>2. LOGDATA<br/>3. SETUP<br/>4. CONSUMPTION]; E --> F[DATE FROM<br/>DATE TO<br/>OCCUPANT RATE<br/>LABOR HOURS]; F --> G[PRINTER STATUS<br/>GENERATING DATA<br/>PLEASE WAIT];
```

IDLE SCREEN

PROGRAM MODE
1. BASIC
2. ADVANCED
3. ACCOUNT
> 4. SYSTEM

SYSTEM PROGRAMMING
1. PRODUCTS
2. SIGNALS
3. MACHINE INFO
4. PASSWORD
> 5. NETWORK

1. RECEIVE DATA IN
2. SEND DATA OUT
> 3. PRINT FORMS
4. NODE ADDRESS

PRINTER FORMS
> 1. PRODUCTIVITY
2. LOGDATA
3. SETUP
4. CONSUMPTION

DATE FROM
DATE TO
OCCUPANT RATE
LABOR HOURS

PRINTER STATUS
GENERATING DATA
PLEASE WAIT

The utility costs and the accounts water temperature is used to generate estimated water, sewer, and energy costs. The labor cost per hour is used to estimate the labor cost for the reporting period. Please refer to programming **Account** Information for more information on programming these items. When requesting the Productivity Report, the Control Module asks the user to enter in the Total Occupancy and the Labor Hours for that reporting period. These values are used to calculate the Expected Weight (10) and Estimated Labor Cost (14) on the printout.

$$\text{Estimated Labor Cost} = \text{Labor Hours} \times \text{Labor Cost Per Hour}$$

The printout provides information on all formulas that have a name programmed. The Quantity is the number of times the formula was run or Load Counts for that formula. The Runtime Exceptions show if formula runtimes exceed the programmed runtimes. *Refer to Section 3.10.1.1 Programming Advanced Formula Data, on page 3-26*, for more on runtimes. *Refer to Section 3.8.8 on Single and Multiple Pump Cabinet Reporting Features, on page 3-14*, to explain printout results when two Control Modules are linked together. *Refer to Appendix B, Equations for Printouts, on page 8-4*, for equations on the remaining report.

Ecolab

Productivity Report						
Our Customer MOUNT OLIVET Reporting Period - From 09-30 Date 10-05 Thru 10-05 Total Occupancy 150 Washers 2						
Formula Name	Qty	Est. Wt.	Exp Wt.	Est. Water Consumption	Run Time	Exceptions
					Long	Short
PERSO.NAL	18	900	900	3150 GALS	0	0
WHITES	41	2050	2250	7175 GALS	1	0
PADS	51	2550	2700	8925 GALS	4*	0
CURTAINS	0	0	450	1400 GALS	0	0
NH WHITE S	8	400	450	1400 GALS	1	1
SHEETS	29	1450	1350	5075 GALS	6	0
WHITE TOWELS	38	1900	1800	6650 GALA	6	1
COLORS	2	100	450	350 GALS	0	0
TOTALS	187	9350	10350	32725 GALS	18	2
Estimated Labor Cost \$604.00	Based On \$7.55	Per Hour				
Estimated Water Cost \$49.09	Based On \$3.00	Per 1000 GALS				
Estimated Sewage Cost \$49.09	Based On \$3.00	Per 1000 GALS				
Estimated Energy Cost \$243.29	Based On 105 P	Temperature Rise				

Your Ecolab Service Representative Is: YOUR NAME HERE

For Service Call 1-800-35CLEAN

ECOLAB®

Date 10-05

Thru 10-05

Washers 2 -

Estimated Labor Cost
Estimated Water Cost
Estimated Sewage Cost
Estimated Energy Cost

Based On \$7.55 Per Hour #18
Based On \$3.00 Per 1000 GALS
Based On \$3.00 Per 1000 GALS
Based On 105 F Temperature Rise

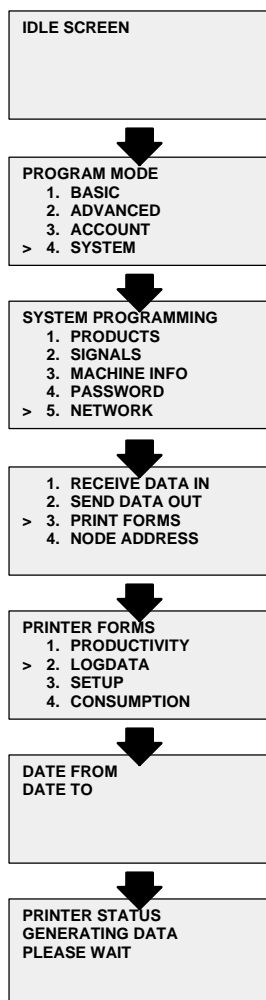
Your Ecolab Service Representative Is: YOUR NAME HERE

For Service Call 1-800-35CLEAN

Productivity Report Explanation		
Item #1	OUR CUSTOMER	The programmed customer name located in the account section of the Programming Mode. Programmable up to 20 characters.
Item #2	DATE	This is today's date, programmed in TIME and DATE section of the Program Mode.
Item #3	REPORTING PERIOD	This is the start date of the Productivity Report history that you would like to provide. This date can be changed to review any piece of history.
Item #4	THRU	When the Production Form has been requested the screen displays DATE TO which is the thru date. The DATE TO always defaults to TODAYS DATE. This date can be changed to review any piece of history at the account you would like to provide.
Item #5	TOTAL OCCUPANCY	In health care, this is an occupied bed. In hospitality, this is an occupied room.
Item #6	WASH MACHINES	In the system network, each machine documents by the Node Address. If the two Control Modules are not connected together with a CR-Net Cable (refer to Figure 4-2 on page 4-3) only one wash machine is shown.
Item #7	FORMULA NAME	The same name programmed on the Idle Screen prints here when the Productivity Report has been requested.
Item #8	QTY	The quantity or number of times this formula has been run.
Item #9	EST. WT.	Estimated Weight - This is the number of loads multiplied by the load weight for this formula. The load weight is programmed as part of the Formula Set-up Record.
Item #10	EXP. WT.	Expected Weight - This is the number of loads multiplied by the WEIGHT/OCCUPANCY for this formula. The WEIGHT/OCCUPANCY is programmed as part of the Formula Data.
Item #11	EST. WATER CONSUMPTION	The estimated Water Consumption is based on the number of HIGH and LOW LEVEL FILLS programmed for this formula.
Item #12	RUNTIME EXCEPTIONS LONG	Any formula that exceeds the maximum programmed amount of time between the START SIGNAL #01 and the STOP SIGNAL #03.
Item #13	RUNTIME EXCEPTIONS SHORT	Any formula that falls below the minimum programmed amount of time between the START SIGNAL #01 and the STOP SIGNAL #03.
Item #14	ESTIMATED LABOR COST	The labor cost is the programmed labor hours multiplied by the employee wages/hour.
Item #15	ESTIMATED WATER COST	This is the total cost of water for all formulas. The estimated water cost is calculated based on the programmed cost of water per 1000 gallons.
Item #16	BASED ON XX.XX PER 1000	This is the programmed cost per 1000 gallons of water.
Item #17	ESTIMATED SEWAGE COST	This is the total cost of sewage for all formulas. The estimated sewage cost is calculated based on the programmed sewage cost per 1000 gallons.
Item #18	BASED ON XX.XX	This is the programmed sewage cost per 1000 gallons of water.
Item #19	ESTIMATED ENERGY COST	This is the cost of natural gas for all formulas. The estimated natural gas cost is calculated based on the programmed cost per therm and temperature rise.
Item #20	YOUR ECOLAB SERVICE REPRESENTATIVE IS	This is the Account Reps name programmable to 20 characters.

Productivity Report Notes

3.11.2 Logdata Report



The Logdata Report provides the user with information about daily activity on the wash machine. This information is a detailed report of all products requested. Each entry includes the date and time, the formula that was selected, the product number, the amount of product that was programmed to be dispensed, and a code that reflects information about the status of the Pump Cabinet when the product was dispensed. The system also logs all power ups and communication errors.

The default formula and product information for these entries is Formula 1 and Product 1.

A code of 223 reflects a power up log and not a dispense. A code of 207 reflects a communication errors to the pump module.

When an empty product is detected by the Pump Cabinet, the Control Module records it as a separate entry with the code reflecting the water temperature in the manifold at the time of the empty. An * by the product number indicates the start of a formula based on the programmed start signal for that formula.

```
****ECOLAB LOGDATA***    Todays Date 10-19    FROM 10-14 TO 10-19    Machine No.2    Page 1
Customer Name: MOUNT OLIVET    Account: 14186837

Date      Formula  Product  Amount  Code ***** Date      Formula  Product  Amount  Code
10-15 06:31  1        *1      100    223
10-15 06:41  1        3       15     0
10-15 07:30  5        *1      30     0
10-15 07:39  5        2       20     0
10-15 08:01  5        3       25     0
10-15 08:23  4        *1     140    0
10-15 08:32  4        2       30     0
10-15 08:51  4        3       20     0
10-15 09:12  2        *1     100    0
10-15 09:22  2        2       20     0
10-15 09:41  2        3       20     0
10-15 10:01  5        *1     130    0
10-15 10:12  5        2       20     0
10-15 10:34  5        3       25     0
10-15 11:15  5        *1     130    0
10-15 11:25  5        2       20     0
10-15 11:47  5        3       25     0
10-15 12:08  5        *1     130    0
10-15 12:19  5        2       20     0
10-15 12:41  5        3       25     0
10-15 13:04  4        *1     140    0
10-15 13:06  4        *1     140    132
10-15 13:13  4        2       30     0
10-15 13:32  4        3       20     0
10-15 13:56  5        *1     130    0
10-15 14:07  5        2       20     0
10-15 14:29  5        -3      25     0
10-16 07:19  5        *1     130    0
10-16 07:29  5        2       20     0
10-16 07:51  5        +3      25     0
10-16 08:14  5        *1     130    0
10-16 08:24  5        2       20     0
10-16 08:47  5        3       25     207
10-16 09:19  6        *1     100    0
10-16 09:39  6        3       15     0
```

****ECOLAB LOGDATA*** Today's Date 10-19 FROM 10-14 TO 10-19 Machine No.2 Page 1
 Customer Name: MOUNT OLIVET Account: 14186837

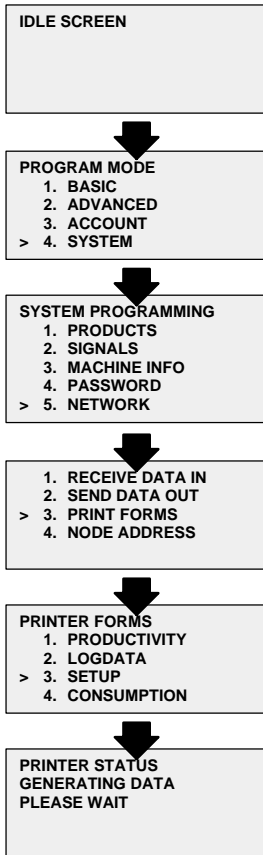
#5	Date	Formula	Product	Amount	Code *****	#6	Date	Formula	Product	Amount	Code
	10-15 06:31	1	*1	100	223						
	10-15 06:41	1	3	15	0						
	10-15 07:30	5	*1	30	0						
	10-15 07:39	5	#10 2	20	0						
	10-15 08:01	5	3	25	0						
	10-15 08:23	4	*1	140	0						
	10-15 08:32	4	2	30	0						
	10-15 08:51	4	3	20	0						
#7	10-15 09:12	2	*1	100	0						
	10-15 09:22	2	2	20	0						
	10-15 09:41	2	3	20	0						
	10-15 10:01		*1	130	0	#12					
	10-15 10:12	#8 2	2	20	0						
	10-15 10:34	5	3	25	0						
	10-15 11:15	5	*1	130	0						
	10-15 11:25	5	2	20	0						
	10-15 11:47	5	3	25	0	#13					
	10-15 12:08	5	*1	130	0						
	10-15 12:19	5	2	20	0						
	10-15 12:41	5	3	25	0						
	10-15 13:04	4	*1	140	0						
	10-15 13:06	4	*1	140	132						
	10-15 13:13	4	2	30	0						
	10-15 13:32	4	3	20	0						
	10-15 13:56	5	*1	130	0	#14					
	10-15 14:07	5	2	20	0						
	10-15 14:29	5	-3	25	0						
	10-16 07:19	5	*1	130	0						
	10-16 07:29	5	2	20	0	#15					
	10-16 07:51	5	+3	25	0						
	10-16 08:14	5	*1	130	0						
	10-16 08:24	5	2	20	0						
	10-16 08:47	5	3	25	207						
	10-16 09:19	6	*1	100	0						
	10-16 09:39	6	3	15	0						

LOGDATA REPORT EXPLANATION

Item #1	TODAYS DATE	The date the report is printed.
Item #2	FROM DATE TO DATE	This report FROM DATE is the date of the last request for this report. The report TO DATE always defaults to today's date The Territory Manager may program in any piece of history from this account for printing and review.
Item #3	MACHINE NUMBER	The wash machine number will be the node address. This is established by the dip switch settings in the Control Module.
Item #4	PAGE	The system can provide up to a maximum of 15 pages of logdata.
Item #5	CUSTOMER NAME	Programmed in the Control Module, up to 20 characters.
Item #6	ACCOUNT	This is the Account Number programmed in the Control Module, up to 20 characters.
Item #7	DATE	The date stamp of a product request.
Item #8	TIME	The time stamp of a product request.
Item #9	FORMULA	The formula number selected.
Item #10	PRODUCT	The product requested: PRODUCT NUMBER: 1. DETERGENT 2. BLEACH 3. SOFT/SOUR 4. OPTION LIQUID 5. OPTION LIQUID 6. CHART STOP
Item #11	AMOUNT	Programmed amount in grams or pump ON time in seconds for a product.
Item #12	CODE	The error code 223 indicates that the power source for the Pump Cabinet has been cycled OFF and ON. Any code that occurs at the same time of an Empty Product Alarm indicates the temperature of the Pump Cabinet water supply at the time of the Empty Alarm.
Item #13	*	The * indicates the start of a formula.
Item #14	-	The minus indicates formulas which are less than the programmed runtime exception limit.
Item #15	+	The plus indicates formulas which have exceeded the programmed runtime exception limit.

Logdata Report Notes

3.11.3 Formula Setup Report



The Setup Report provides a printout that details how each formula has been programmed. This report provides all information on programmed delays, amounts, weight per occupancy, load weight, minimum and maximum runtime, and number of high and low level fills on a per formula basis. Delays and gram amounts are programmed in **Basic** programming; formula data, start and stop signals, runtimes and water data are programmed in **Advanced** programming. The format of the report is based on a step or supply format. The Solid System III has a maximum of six steps or supply signal inputs per formula. Step 1 is the Detergent information. Step 2 is the Bleach information. Step 3 is the Sour/Soft information. Step 4 and Step 5 are the optional products information. Step 6 is the Chart Stop information. Refer to the formula programming information for more information on each of these items.

When requesting the report with the <ENT> key, the display informs the user of the current status of the printout. The status of the printout continues to display until the user presses the <EXT> key. It is not necessary to wait until the printout is complete to press the <EXT> key.

Formula Setup Report										ECOLAB®	
Account Name: MOUNT OLIVET Date: 11-12 Washer: 1 ID: UISS Page: 1											
Formula: 1 : PERSONAL		Wt/Occupancy: 1.0		Load Weight: 50		Run Time Max: 35		Run Time Min: 30			
High Level Fills: Hot 0		Split: 5		Low Level Fills: Hot 0		Split: 1		Cold: 0			
Step:	1	2	3	4	5	6	7	8	9	10	
Supply:	1	2	3	4	5	6	7	8	9	10	
Delay:	5	0	5	0	0	0	0	0	0	0	
AMT:	50	0	15	0	0	0	0	0	0	0	
Formula: 3 : WHITTES		Wt/Occupancy: 2.5		Load Weight: 50		Run Time Max: 40		Run Time Min: 35			
High Level Fills: Hot 1		Split: 3		Low Level Fills: Hot 2		Split: 1		Cold: 0			
Step:	1	2	3	4	5	6	7	8	9	10	
Supply:	1	2	3	4	5	6	7	8	9	10	
Delay:	5	5	0	0	0	0	0	0	0	0	
AMT:	70	15	10	0	0	0	0	0	0	0	
Formula: 5 : PADS		Wt/Occupancy: 3.0		Load Weight: 50		Run Time Max: 45		Run Time Min: 40			
High Level Fills: Hot 1		Split: 3		Low Level Fills: Hot 2		Split: 1		Cold: 0			
Step:	1	2	3	4	5	6	7	8	9	10	
Supply:	1	2	3	4	5	6	7	8	9	10	
Delay:	5	5	0	0	0	0	0	0	0	0	
AMT:	100	20	20	0	0	0	0	0	0	0	
Formula: 6 : CURTAINS		Wt/Occupancy: 0.5		Load Weight: 30		Run Time Max: 20		Run Time Min: 25			
High Level Fills: Hot 0		Split: 4		Low Level Fills: Hot 1		Split: 1		Cold: 1			
Step:	1	2	3	4	5	6	7	8	9	10	
Supply:	1	2	3	4	5	6	7	8	9	10	
Delay:	5	0	0	0	0	0	0	0	0	0	
AMT:	40	0	0	0	0	0	0	0	0	0	
Formula: 10 : NEW WHITTES		Wt/Occupancy: 0.5		Load Weight: 50		Run Time Max: 40		Run Time Min: 35			
High Level Fills: Hot 1		Split: 3		Low Level Fills: Hot 2		Split: 1		Cold: 0			
Step:	1	2	3	4	5	6	7	8	9	10	
Supply:	1	2	3	4	5	6	7	8	9	10	
Delay:	5	5	5	0	0	0	0	0	0	0	
AMT:	50	10	5	0	0	0	0	0	0	0	
Formula:		Wt/Occupancy:		Load Weight:		Run Time Max:		Run Time Min:			
High Level Fills: Hot		Split:		Low Level Fills: Hot		Split:		Cold:			
Step:	1	2	3	4	5	6	7	8	9	10	
Supply:											
Delay:											
Amt:											

Formula Setup Report



#1 **Account**
Name: MOUNT OLIVET

#2 **Date:** 11-12

#3 **Washer:** 1

#4 **IL:** SS

#5 **Page:** 1

#6 **Formula: 1 : PERSONAL**
High Level Fills: Hot 0
Wt/Occupancy: 1.0
Split: 5
Cold: 0
Load Weight: 50
Run Time Max: 35
Run Time Min: 30
Low Level Fills: Hot 0
Split: 1
Cold: 0

#7 **Step:** 1 2 3 4 5 6 7 8 9 10

#8 **Supply:** 1 2 3 4 5 6 7 8 9 10

#9 **Delay:** 5 0 5 0 0 0 0 0 0 0

#10 **AMT:** 50 0 15 0 0 0 0 0 0 0

#11 **Formula: 3 : WHITES**
High Level Fills: Hot 1
Wt/Occupancy: 2.5
Split: 3
Cold: 0
Load Weight: 50
Run Time Max: 40
Run Time Min: 35
Low Level Fills: Hot 2
Split: 1
Cold: 0

#12 **Step:** 1 2 3 4 5 6 7 8 9 10

#13 **Supply:** 1 2 3 4 5 6 7 8 9 10

#14 **Delay:** 5 5 0 0 0 0 0 0 0 0

#15 **AMT:** 70 15 10 0 0 0 0 0 0 0

Formula: 5 : PADS
High Level Fills: Hot 1
Wt/Occupancy: 3.0
Split: 3
Cold: 0
Load Weight: 50
Run Time Max: 45
Run Time Min: 40
Low Level Fills: Hot 2
Split: 1
Cold: 0

Step: 1 2 3 4 5 6 7 8 9 10

Supply: 1 2 3 4 5 6 7 8 9 10

Delay: 5 5 0 0 0 0 0 0 0 0

AMT: 100 20 20 0 0 0 0 0 0 0

Formula: 6 : CURTAINS
High Level Fills: Hot 0
Wt/Occupancy: 0.5
Split: 4
Cold: 0
Load Weight: 30
Run Time Max: 20
Run Time Min: 25
Low Level Fills: Hot 1
Split: 1
Cold: 1

Step: 1 2 3 4 5 6 7 8 9 10

Supply: 1 2 3 4 5 6 7 8 9 10

Delay: 5 0 0 0 0 0 0 0 0 0

AMT: 40 0 0 0 0 0 0 0 0 0

Formula: 10 : NEW WHITES
High Level Fills: Hot 1
Wt/Occupancy: 0.5
Split: 3
Cold: 0
Load Weight: 50
Run Time Max: 40
Run Time Min: 35
Low Level Fills: Hot 2
Split: 1
Cold: 0

Step: 1 2 3 4 5 6 7 8 9 10

Supply: 1 2 3 4 5 6 7 8 9 10

Delay: 5 5 5 0 0 0 0 0 0 0

AMT: 50 10 5 0 0 0 0 0 0 0

Formula:
High Level Fills: Hot
Wt/Occupancy:
Split: Cold:
Load Weight: Run Time Max: Run Time Min:
Low Level Fills: Hot Split: Cold:

Step: 1 2 3 4 5 6 7 8 9 10

Supply:

Delay:

Amt:

FORMULA SETUP REPORT EXPLANATION

Item #1	ACCOUNT NAME	Programmed in the Control Module, up to 20 characters.
Item #2	DATE	The date the report is printed.
Item #3	WASH MACHINE	This system always prints wash machine number. Wash machine assignment location is established by the Control Module dip switch settings.
Item #4	PAGE	Formula setup information is available for all 16 formulas. A maximum of three pages can be printed per machine.
Item #5	FORMULA	This is the same formula identification number and name that has been programmed on the Idle Screen for account use.
Item #6	WEIGHT/OCCUPANCY	This is an estimate of the soiled pounds of linen used each day for each bed for each formula programmed at an account.
Item #7	LOAD WEIGHT	Estimated Load Weight for each linen classification at an account.
Item #8	RUNTIME MAX	The maximum amount of runtime for each formula. Runtime is established by the amount of time from a SUPPLY 1 DETERGENT START request to the SUPPLY 3 SOFT STOP request.
Item #9	RUN TIM MIN.	The minimum amount of runtime for each formula. Runtime is established by the amount of time from a SUPPLY 1 DETERGENT START request to the SUPPLY 3 SOFT STOP request.
Item #10	HIGH LEVEL FILLS	a. HOT: The number of times during a formula that the machine fills to a Hot High Level. b. SPLIT: The number of times during a formula that the machine fills to a Split Temperature High Level. c. COLD: The number of times during a formula that the machine fills to a Cold High Level.
Item #11	LOW LEVEL FILLS	a. HOT: The number of times during a formula that the machine fills to a Hot Low Level. b. SPLIT: The number of times during a formula that the machine fills to a Split Temperature Low Level. c. COLD: The number of times during a formula that the machine fills to a Cold Low Level.
Item #12	STEP	This is a step within a formula that the machine provides a supply request. The Solid System III has a maximum of 6 steps and they are as follows: STEP 1 - Detergent Request STEP 4 - Optional Liquid STEP 2 - Bleach Request STEP 5 - Optional Liquid STEP 3 - Sour/Soft Request STEP 6 - Chart Stop
Item #13	SUPPLY	This is a supply request to each input on the Input Board. The Solid System III has a maximum of 6 inputs and they are as follows: INPUT 1 - Detergent INPUT 4- Optional Liquid INPUT 2 - Bleach INPUT 5- Optional Liquid INPUT 3 - Sour/Soft INPUT 6- Chart Stop
Item #14	DELAY	This is the programmed delay time in seconds for each product and each formula. Solid System III has a delay available for each of the 6 inputs.
Item #15	AMT	This is the programmed amount of product in grams or the programmed amount of seconds for the Optional Liquids and Chart Stop. SUPPLY - 1, 2 and 3 are in grams. SUPPLY - 4, 5 and 6 are in seconds.

Formula Setup Report Notes

```
graph TD; A[IDLE SCREEN] --> B[PROGRAM MODE<br/>1. BASIC<br/>2. ADVANCED<br/>3. ACCOUNT<br/>4. SYSTEM]; B --> C[SYSTEM PROGRAMMING<br/>1. PRODUCTS<br/>2. SIGNALS<br/>3. MACHINE INFO<br/>4. NETWORK]; C --> D[1. RECEIVE DATA IN<br/>2. SEND DATA OUT<br/>3. PRINT FORMS<br/>4. NODE ADDRESS]; D --> E[PRINTER FORMS<br/>1. PRODUCTIVITY<br/>2. LOGDATA<br/>3. SETUP<br/>4. CONSUMPTION]; E --> F[DATE FROM<br/>DATE TO<br/>TOTAL PAT DAYS XX.X<br/>TOTAL OCC RMS XX.X]; F --> G[PRINTER STATUS<br/>GENERATING DATA<br/>PLEASE WAIT]; G --> H[GENERAL PRINTOUT<br/>> 1. YES<br/>2. NO]; H --> I['#01 PRODUCT NAME<br/>CAPSULES USED XX.X<br/>COST PPD CXXX.XX<br/>COST POR CXXX.XX']; I --> J[FILE STATUS<br/>GENERATING DATA<br/>PLEASE WAIT]; J --> K['#01 PRODUCT NAME<br/>CAPSULES USED 99.9<br/>COST PPD C999.99<br/>COST POR C999.99'];
```

Flowchart illustrating the printer's menu system:

- IDLE SCREEN
- PROGRAM MODE
 - 1. BASIC
 - 2. ADVANCED
 - 3. ACCOUNT
 - > 4. SYSTEM
- SYSTEM PROGRAMMING
 - 1. PRODUCTS
 - 2. SIGNALS
 - 3. MACHINE INFO
 - > 4. NETWORK
- 1. RECEIVE DATA IN
- 2. SEND DATA OUT
- > 3. PRINT FORMS
- 4. NODE ADDRESS
- PRINTER FORMS
 - 1. PRODUCTIVITY
 - 2. LOGDATA
 - 3. SETUP
 - > 4. CONSUMPTION
- DATE FROM
- DATE TO
- TOTAL PAT DAYS XX.X
- TOTAL OCC RMS XX.X
- PRINTER STATUS
- GENERATING DATA
- PLEASE WAIT
- GENERAL PRINTOUT
 - > 1. YES
 - 2. NO
- #01 PRODUCT NAME
- CAPSULES USED XX.X
- COST PPD CXXX.XX
- COST POR CXXX.XX
- FILE STATUS
- GENERATING DATA
- PLEASE WAIT
- #01 PRODUCT NAME
- CAPSULES USED 99.9
- COST PPD C999.99
- COST POR C999.99

NOTE: Use the ↑ and ↓ keys to move to all products. Pressing the <ENT> key starts the printout process. If the cases used is not programmed for all products prior to pressing the <ENT> key, the product usage on the printout is zero.

The system then calculates the estimated product usage based on the Logdata and allows the user to view the calculated usage. The user can then compare the calculated product usage and the visual product inventory. The Cases Used that is entered is to the nearest tenth of a case. The Cases Used that is calculated is also to the tenth of case. *Refer to Appendix B Equation for Printouts, on page 8-4, for equations on the remaining report.*

[illegible]

Consumption Report

Reporting Period - From 10-14 Thru 10-19

[illegible]**ECOLAB®**

CONSUMPTION REPORT EXPLANATION

Item #1	TODAY'S DATE	The date the report is printed.
Item #2	OUR CUSTOMER	Programmed customer name in the Control Module, up to 20 characters.
Item #3	OUR CUSTOMER	Programmed account number in the Control Module, up to 20 characters.
Item #4	REPORTING PERIOD FROM-	From: this is the start date of the Consumption Report history that you would like to provide. This date can be changed to review any piece of history at the account you would like to provide.
Item #5	REPORTING PERIOD THRU-	Thru: When the Consumption Report is requested, the screen displays DATE TO which is the thru date. The DATE TO always defaults to today's date. This date can be changed to review any piece of history at the account you would like to provide. NOTE: Reference to Item #4 and #5 above, your next visit provides the DATE FROM which was the last Consumption Report Request. The DATE TO today, on your future visit, becomes the DATE FROM.
Item #6	PRODUCT	A maximum of five products will be listed in the selection. These product names are programmed in the Control Module.
Item #7	INVENTORY	The inventory is based on the difference between the current inventory and the inventory on the previous visit. Also be sure to include any product that has been delivered since the last visit. The inventory level is based on the following assumptions. <ul style="list-style-type: none">● 4 BOTTLES to a case, 1 BOTTLE would be programmed [.25].● 2 BOTTLES to a case, 1 BOTTLE would be programmed [.50]. Refer to Section 3.11.6 Capsules/Case Portion Information on page 3-60 for a chart providing capsule to case conversions.
Item #8	CENTS PPD/POR	Cents PPD represents the cents Per Patient Day: The average cents of processing soiled linens for each full patient day. Cents POR represents the cents Per Occupied Room: The average cents of processing soiled linens for each occupied room.

Consumption Report with Printout Notes

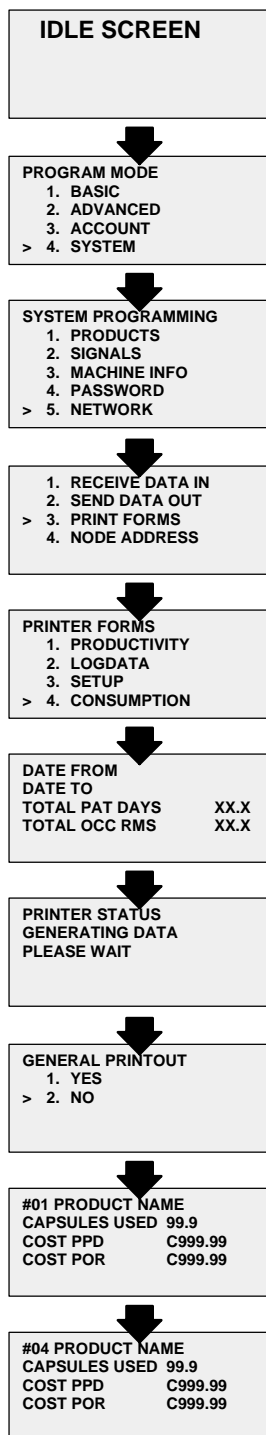
3.11.5 Consumption Report without Printout

The Consumption Report without Printout allows the user to view product usage based on what the system calculates. See also *Section 3.11.4 Consumption Report with Printout on page 3-54*. The Printer Module **MUST BE** connected to the Control Module to generate a Consumption Report even if no printout is required. The product usage information is available for all products that have a product name programmed. See programming product information for more information on how this is done. When the Consumption Report is requested, the user is asked to input the Total Patient Days or the Total Occupied Rooms for the period of time that the user is requesting. These two values are used to generate the cost associated with the reporting period.

$$\text{Cost Per Patient Day} = \text{Cases Used} \times \text{Cost Per Case} / \text{Patient Days}$$

$$\text{Cost Per Occupied Room} = \text{Cases Used} \times \text{Cost Per Case} / \text{Occupied Rooms}$$

Once this information is entered, the Printer Module provides the Control Module with a list of the product names that are programmed into the Control Modules. The Control Module then needs to know whether the user wants a printout. For now we will select "NO" from the menu. The Logdata is then read to accumulate the amount of product used and the cost associated with the product. The display then shows the Product Name and the amount of product used and the cost associated. The user can use the ↑ or ↓ keys to view all the product information that was generated. The <EXT> key can be used to leave this display or to abort the report at any time.



Consumption Report without Printout Notes

3.11.6 Capsules/Case Portion Information

PRODUCT	CAPSULES	CASE PORTION
SOLID DETERGENT (4 capsules/case)	0.25	0.06
	0.50	0.13
	0.75	0.19
	1.00	0.25
	1.25	0.31
	1.50	0.38
	1.75	0.44
	2.00	0.50
	2.25	0.56
	2.50	0.63
	2.75	0.69
	3.00	0.75
	3.25	0.81
	3.50	0.88
	3.75	0.94
	4.00	1.00
SOLID BLEACH PRODUCT (2 capsules/case)	0.25	0.13
	0.50	0.25
	0.75	0.38
	1.00	0.50
	1.25	0.63
	1.50	0.75
	1.75	0.88
	2.00	1.00
SOLID FINISHING PRODUCT (2 capsules/case)	0.25	0.13
	0.50	0.25
	0.75	0.38
	1.00	0.50
	1.25	0.63
	1.50	0.75
	1.75	0.88
	2.00	1.00

4.0 Printer Module

The Printer Module provides a buffer and printer-language interpreter for printing reports using a Cannon BJ-10 (E, EX, or SX) printer. This section provides an overview, specifications, and installation of the Printer Module. Refer to your printer manual for specifics pertaining to installation and operation of the printer.

4.1 Introduction

This sections describes the indicator lights, internal rechargeable battery, and battery charging.

4.1.1 Indicator Lights

The Printer Module has the following indicator lights (*refer to Figure 4-1*):

Status

- Continuously ON indicates that the power switch is ON and the unit is properly powered.
- Rapid blinking indicates data transfer activity between the Control Module and the Printer Module. (*Refer to Section 6.6, Printer Module/Printer Report Function Table on page 6-9 for estimate time.*)
- Slow blinking indicates data transfer activity between the Printer Module and the printer.

Low Battery

Indicates the battery voltage level for the rechargeable battery.

4.1.2 Internal Rechargeable Battery

4.1.2.1 Battery Life

The Printer Module contains a 1.4 Amp Hour Ni-Cad rechargeable battery. When fully charged, the battery powers the Printer Module for approximately 3.5 hours continuously. Battery life is independent of whether or not printing activity is going on.

4.1.2.2 Battery Use

Battery charging is going on anytime the 120 VAC adapter is powered and connected to the Printer Module's 1.3 mm power plug. The battery is fully charged after 12 hours of charging. Ni-Cad battery life is maximized by recharging the battery only after the battery becomes depleted.

4.1.3 Battery Charging

1. Use the battery until it is 90% discharged (about 3 hours use).
2. Connect the 120 VAC power adapter to the Printer Module and a 120 VAC power source for 12 hours.

NOTE: The battery charges with the switch in either the ON or OFF position.

4.2 Specifications

The section outlines the space requirements and service access.

4.2.1 Dimensions

- Height (H): 7" (17.8 cm)
- Width (W): 5" (12.7 cm)
- Depth (D): 2-1/2" (6.4 cm)

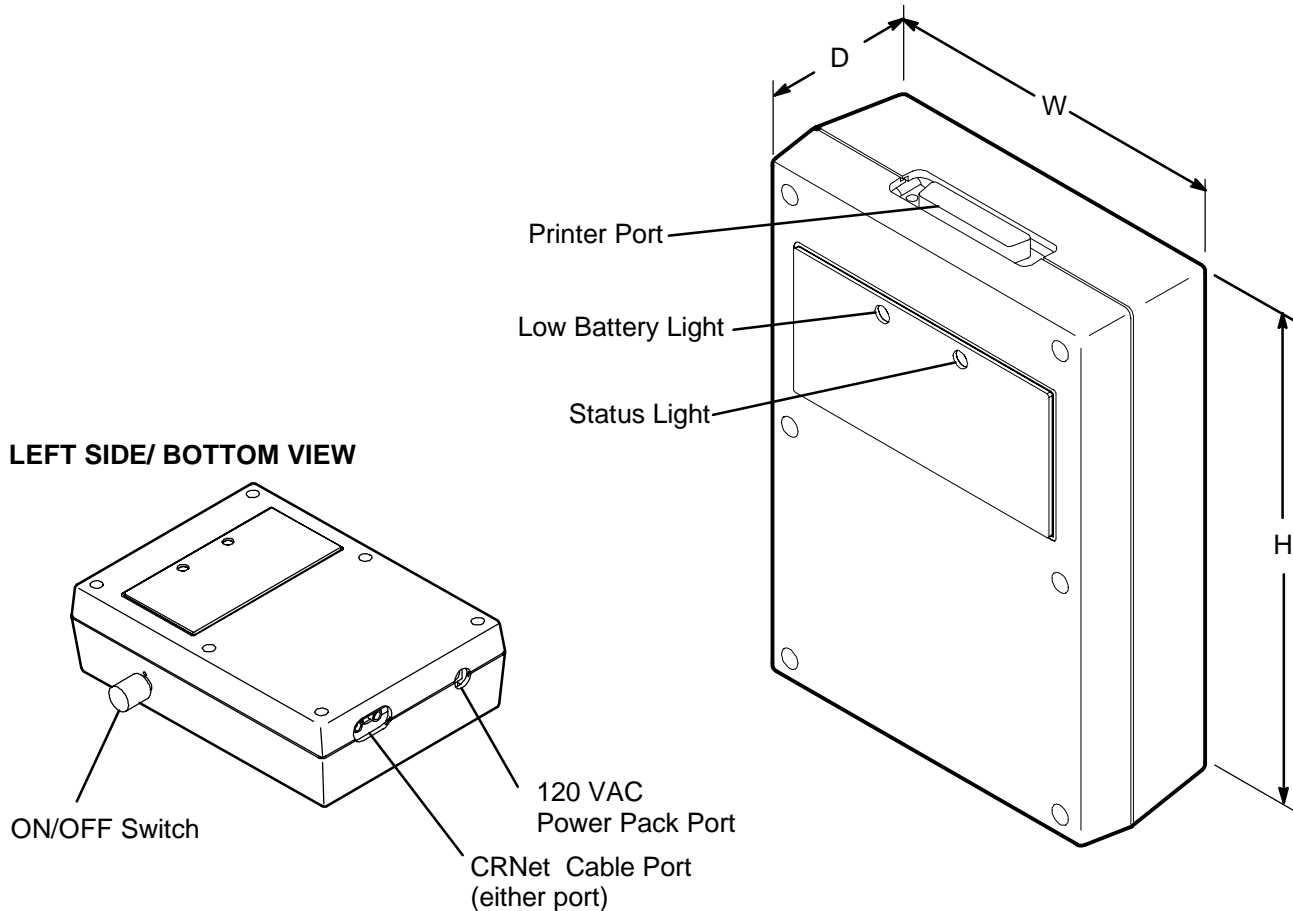


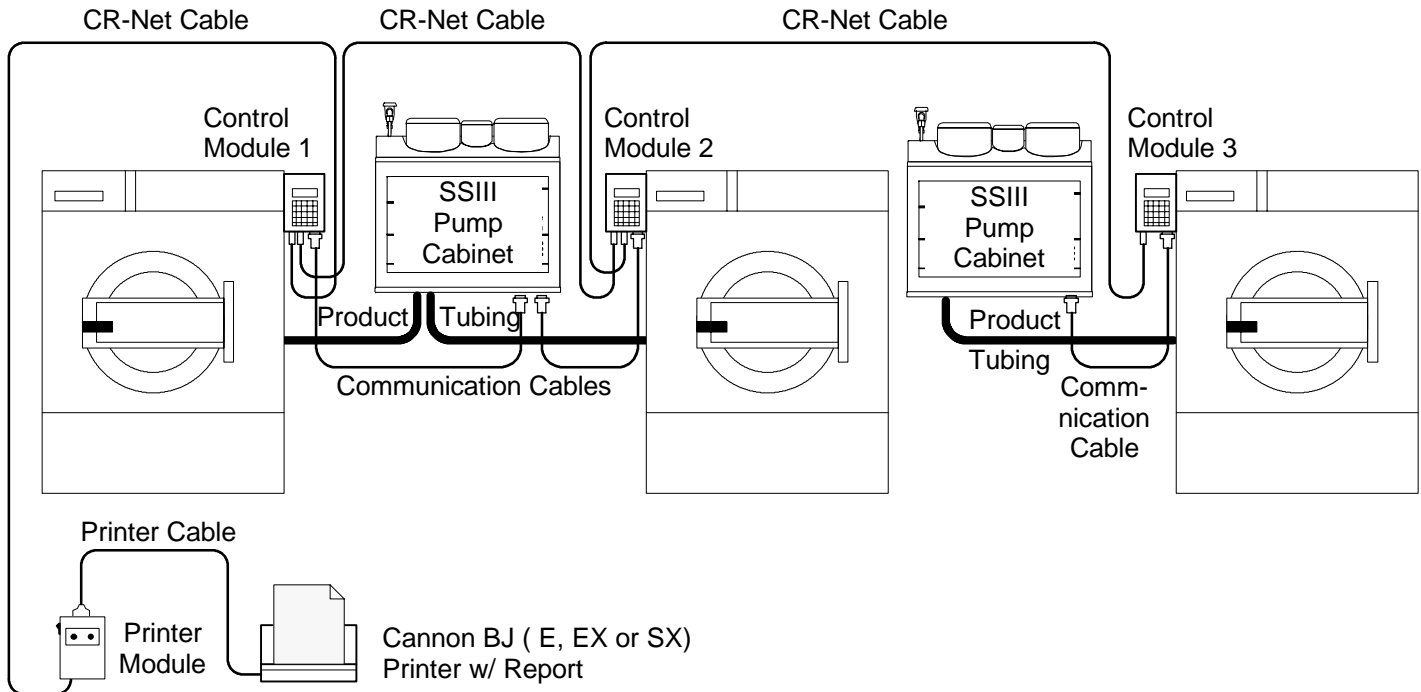
Figure 4-1

4.2.2 Service Access

The front cover is removeable. Access the internal components by removing the six fastener screws on the front cover.

4.3 Installation

This section depicts the connection procedure for the Printer Module to the Control Module and printer. This package includes the Printer Module and a 120-VAC wall adapter. The user **MUST** provide a Cannon BJ-10 (E, EX, or SX) printer and an IBM standard printer cable.



NOTE: Printer and Printer Module can be used with 120-VAC Wall Adapters if not fully charged.

Figure 4-2

To connect the Printer Module to the Control Module and printer, perform the following steps:

NOTE: The user must provide a Cannon BJ-10 (E, EX or SX) Printer and a IBM PC standard printer cable.

1. Connect the Printer Module to a Cannon BJ-10 (E, EX or SX) printer using a IBM PC standard printer cable. The cable connects to the Printer Module through a female 27-pin D-SUB connector. *Refer to Figure 4-2.*
2. Connect the Printer Module to the Control Module using a CRNet network cable. One end of the cable connects to the Printer Module through either of the two 1/8inch phono jacks on the end of the Printer Module. The other end of the cable connects to the Control Module through either of the two 1/8inch phono jacks on the bottom of the Control Module.
3. Connect the Printer Module to an 120-VAC power using the provided 120-VAC wall adapter. The adapter module connects to the Printer Module through a 1.3mm female power plug on the end of the module. The wall adapters are not required if the Printer Module and printer batteries have been previously charged.

NOTE: If 120 VAC power is not available, after the internal Printer Module battery is charged, make sure the wall adapter is NOT connected to the Printer Module.

-
4. Perform the following steps to prepare the printer for the printing of reports (refer to printer manual if necessary):
 - a. Turn the Cannon printer ON.
 - b. Insert a blank sheet of paper or the preprinted Ecolab form into the printer paper-feed path.
 - c. Press printer FF" (Form Feed) button followed by ON LINE" button to load the paper.
 - d. Turn ON the Printer Module power switch, located on the left side. The red STATUS" light should illuminate continuously to indicate that the unit has power.
 - e. After programming the Control Module, begin the printout procedures. *Refer to Section 3.11 Printer Reports on page 3-41.*

NOTE: **It is not necessary to have the printer or the Printer Module connected while programming the Control Module.**

5.0 Set-up and Operation

The following procedures take you through a step-by-step routine in the initial operation of the Solid System III. Before proceeding with this section the following items should have been completed:

- Solid System III must be wired to the proper signal inputs from each wash machine.
- The Solid System III must be programmed with the proper formula selections and product amounts. Pump Cabinet power must be ON."

5.1 Product/Wash Signal Check

This section provides the product/wash signal check procedures for the Sour/Soft, Bleach, and Detergent dispensing pockets.

NOTE: Add one cup of water to the sump to prime the pump.

NOTE: Prior to testing products, the Sour/Soft cycle needs to be run to achieve a conductivity sample of account water for proper operation.

5.1.1 Sour/Soft

The following procedure ensures an active connection between the wash machine and the Sour/Soft product.

1. Place an empty glass or cup over the spray nozzle for the Sour/Soft product, *refer to Figure 5-1*.
2. At the wash machine, send an input #3 Sour/Soft signal to the Control Module. This cycles the Pump Cabinet for a Sour/Soft feed.
3. Hold down the proximity switch of the Sour/Soft capsule pocket. This is the safety switch that tells the system that a capsule of product is in place.

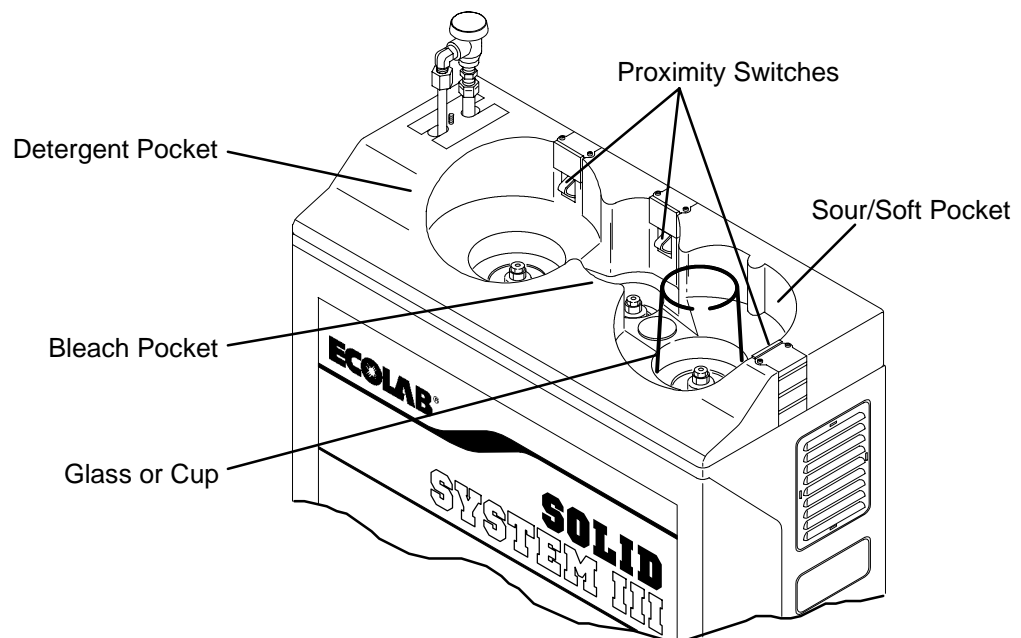


Figure 5-1

-
4. Release and depress the proximity switch a couple of times. This activates the Sour/Soft 3-way solenoid valve ON" and OFF" (after the preflush has been completed).
 5. Press the proximity switch one last time and check the water inlet regulator for 15 psi which was previously set.

NOTE: After 70 seconds (this time includes a 40 second preflush), the Empty Capsule Alarm" sounds. Press the asterisk key (*) to turn off the alarm and reset the Pump Cabinet.

NOTE: If temperature falls below 118°F, Sour/Soft goes empty after 82 seconds.

5.1.2 Bleach

The following procedure ensures an active connection between the wash machine and the Bleach product.

1. Place an empty glass or cup over the spray nozzle for the Bleach product.
2. At the wash machine, send an input #2 Bleach signal to the Control Module. This cycles the Pump Cabinet for a Bleach feed.
3. Hold down the proximity switch of the Bleach capsule pocket. This is the safety switch that tells the system that a capsule of product is in place.
4. Release and depress the proximity switch a couple of times. This cycles ON" and OFF" the Bleach solenoid valve (after the preflush has been completed).
5. Press the proximity switch one last time and check the water inlet regulator for 15 psi which was previously set.

NOTE: After 100 seconds (this time includes a 40 second preflush), the Empty Capsule Alarm" sounds. Press the asterisk key (*) to turn off the alarm and reset the Pump Cabinet.

5.1.3 Detergent

The following procedure ensures an active connection between the wash machine and the Detergent product.

1. Place an empty glass or cup over the spray nozzle for the Detergent product.
2. At the wash machine, send an input #1 Detergent signal to the Control Module. This cycles the Pump Cabinet for a Detergent feed.
3. Hold down the proximity switch of the Detergent capsule pocket. This is the safety switch that tells the system that a capsule of product is in place.
4. Release and depress the proximity switch a couple of times. This cycles ON" and OFF" the Detergent solenoid valve (after the preflush has been completed).
5. Press the proximity switch one last time and adjust the water inlet regulator to 15 psi. Also, adjust the mixing valve to 130°F (54°C). The temperature displays on the Control Module (Diagnostics ON").

NOTE: After 90 seconds (this time includes a 30 second preflush), the Empty Capsule Alarm" sounds. Press the asterisk key (*) to turn off the alarm and reset the Pump Cabinet.

5.2 Startup Procedures

Once each product has been tested for proper wash machine supply signals, valve operation, and water pressure and adjusted to the correct operating temperature, the Solid System III is ready for operation.

1. Place product capsules into their appropriate pockets on the Pump Cabinet.
2. Load a batch of linens to be washed.
3. Select the appropriate wash formula by using the ↑ and ↓ keys.
4. Start the wash machine.

5.3 Account Available Screens

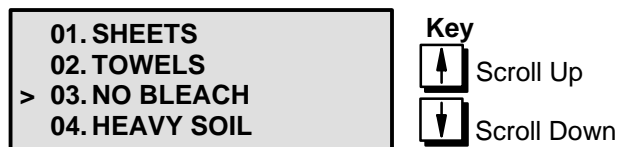
There are four screens the account operators have access to:

- Formula Selection Idle Screen
- Formula Selection Idle Screen with Load Counts
- Current Formula Running Screen
- Empty Capsule Screen

5.3.1 Formula Selection Idle Screen

This screen displays the 16 programmable formula's available for use. To review all 16 formulas, use the ↑ and ↓ keys.

EXAMPLE:



5.3.2 Formula Selection Idle Screen with Load Counts

From the Idle Screen, the total number of loads run for each formula can be reviewed by pressing the number 8 on the keypad. The number of loads display on the right-hand side of the screen. To review all 16 formulas, use the ↑ and ↓ keys. The load count shown represents the total number of **Solid Sour/Soft supply signals**. After viewing the load counts, press the <EXT> key.

EXAMPLE:

01. SHEETS	0000	Key ↑ Scroll Up ↓ Scroll Down
02. TOWELS	0000	
> 03. NO BLEACH	0000	
04. HEAVY SOIL	0000	

NOTE: Always provide the Supply Signal #3 input for the purpose of counting loads and returning the Control Module screen from Running" to Idle." If no product is desired, program a zero amount.

EXAMPLE: FORMULA #10

> 10. MOPS AND RAGS
PRODUCT #03
DELAY 000 SECONDS
RUN 000 GRAMS

NOTE: No product dispenses; however, you would still return the Running Screen" back to Idle Screen" and increment the load count by one.

5.3.3 Current Running Formula Screen

The Formula Running Screen displays to the customer when the first machine signal is received. You can choose to display this information by choosing ON" or not to display by choosing OFF" when programming.

5.3.3.1 Diag ON"

When Running Diag ON" is selected, this screen displays four lines of information which reads as follows:

EXAMPLE:

#01 - SHEETS		
DISPENSING DETERGENT		
T:130	C:151	S:1

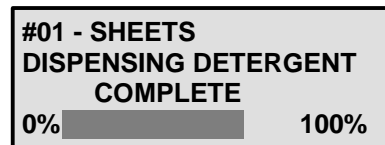
DISPLAY EXPLANATION		
Line #1	#01-SHEETS	# 01, 02, 03 thru 16 depending on which selection has been made. This is the same information provided on the Idle Screen.
Line #2	DISPENSING DETERGENT	<p>Once a signal has been received, displays the Pump Cabinet activity. It provides one of the following pieces of information.</p> <p>The formula has been selected and the system is waiting for a supply signal. Once the signal is received, the display displays one of the following:</p> <ul style="list-style-type: none"> a. WAITING (Detergent, Bleach or Sour/Soft) - The Control Module is waiting for a wash machine signal. b. PENDING (Detergent, Bleach or Sour/Soft) - The amount of time programmed (000 to 99 sec) as delay time. It can also indicate a request for product was recognized. However, the Pump Cabinet is busy dispensing a product to the other wash machine. c. FLUSHING (Detergent, Bleach or Sour/Soft) - The Pump Cabinet has an automatic 40 second preflush for the Bleach and Sour/Soft. The Detergent has a 30 second preflush. d. DISPENSING (Detergent, Bleach or Sour/Soft) - The Pump Cabinet is now dispensing the programmed amount of product for the formula selected. e. FLUSHING (Detergent, Bleach or Sour/Soft) - Detergent and Bleach have a 30 second post flush and Sour/Soft has a 35 second post flush.

Line #3	Blank line, no information given.
Line #4 T:	<p>This is the present water supply temperature in degrees Fahrenheit at the Pump Cabinet. The display is updated only when the Pump Cabinet is operating. The display, while in the WAITING" mode, locks on the water temperature recorded during the last operation.</p> <p>A reference number that represents product flow rate as the product is being measured at the conductivity cell. The system has 3 scales with each scale having a operating range from 0 to 230. A number 100 on the display represents a smaller flow rate of product when compared to a number 210 within the same scale.</p> <p>Supply signal 1, 2, 3, 4, 5, or 6 is shown whenever that signal is present. If two signals are ON at the same time, only the last signal is displayed.</p>
C:	
S:	

5.3.3.2 Diag OFF"

When Running Diag OFF" is selected, this screen displays four lines of information which read as follows:

EXAMPLE:



DISPLAY EXPLANATION	
Line #1 Line #2	Provides the same information as the previous section Running Formula Screen (Running Diag ON").
Line #3 Line #4	Provides information on the progress of the Pump Cabinet by displaying a 0 to 100% completion bar graph.

5.3.4 Empty Capsule Screen

When the Pump Cabinet is trying to dispense a product and the product capsule is empty, an alarm sounds and the display reads:

The image shows a rectangular display screen with a black border. Inside, the text is centered and reads: '# 01 - SHEETS' on the first line, 'FLUSHING DETERGENT' on the second line, 'EMPTY DETERGENT' on the third line, and 'REPLACE/HIT * TO CLR' on the fourth line.

1. Press the * key to clear the display.
2. Replace the empty capsule.
3. Restart selection.

6.0 Troubleshooting

6.1 Pump Cabinet Related Issues

Symptom	Possible Cause	Action
6.1.1 Water from overflow tube.	1. Pressure regulator set too high.	a. Adjust to 17 psi.
	2. If pump is running.	a. Check if solution is flowing to machine. If not, refer to Symptom 6.1.6.
	3. If pump is not running, determine if pump light on output board is ON". Refer to Figure 6-1 on page 6-3.	a. If pump light is ON", replace pump. b. If pump light is not ON", replace output board.
	4. Turn Pump Cabinet power OFF".	a. If water continues to flow, repair/replace the main solenoid.
6.1.2 No temperature display.	1. Check connections at the thermistor.	a. Repair as needed.
	2. Thermistor failed	a. Replace the thermistor.
6.1.3 No conductivity display.	1. Check connections at the conductivity cells.	a. If connections are OK, replace the CPU board.
6.1.4 Flashing light on Pump Cabinet signaling Machine #1" or Machine #2".	1. Remember that if the Pump Cabinet is only connected to one machine, the light will always flash.	a. No action required.
	2. Check both ends of cable connection.	a. If loose, tighten the connector screws.
	3. Noise corrupted communications.	a. Cycle power.
6.1.5 If both Machine #1 and Machine #2 lights are flashing.	1. Check cable connections to both Control Modules.	a. If loose, tighten the connector screws.
	2. Check machine dip switches in both Control Modules.	a. Reset switches; cycle power.
	3. Noise corrupted communications.	a. Cycle power.
	4. Bad ribbon cable.	a. Replace ribbon cable.
	5. Bad communications cable.	a. Replace communications cable.
6.1.6 Pump runs but will not move any fluid to the wash machine.	1. Pump needs to be primed.	a. Turn off the Pump Cabinet and add one cup of water to the sump.
	2. Machine solenoid is not opening.	a. Refer to Symptom 6.1.7.
6.1.7 Machine solenoid valve will not open.	1. Determine if machine solenoid light on output board is on. Refer to Figure 6-1 on page 6-3.	a. If light not on, replace CPU board. b. If light is on, repair/replace valve.

Symptom	Possible Cause	Action
6.1.8 Pump Cabinet's Power ON" light is off.	1. Check Pump Cabinet switch.	a. If OFF", turn to ON" position.
	2. Check 120 VAC source.	a. If no 120 VAC at outlet, check circuit breaker.
	3. Check test points for proper output, refer to Figure 6-1 on page 6-3.	a. If test point voltages are wrong, replace power supply. b. If test point voltages are correct, replace the CPU board.
6.1.9 Product consumption too high.	1. No baseline conductivity.	a. Run Softener with no product to get baseline.
	2. Compare actual consumption to individual product feed counts.	a. Review product counters.
	3. Check for broken wire at conductivity cell.	a. Observe conductivity on display while dispensing.
	4. Check product solenoid valves for proper operation.	a. Repair/replace if necessary. b. If valve does not close immediately when deenergized, the diaphragm is weak and should be replaced.
	5. Check product factors are set correctly.	a. Change factors if not correct.
	6. Check test points for proper output., refer to Figure 6-1 on page 6-3.	a. If voltage is not correct, change power supply.

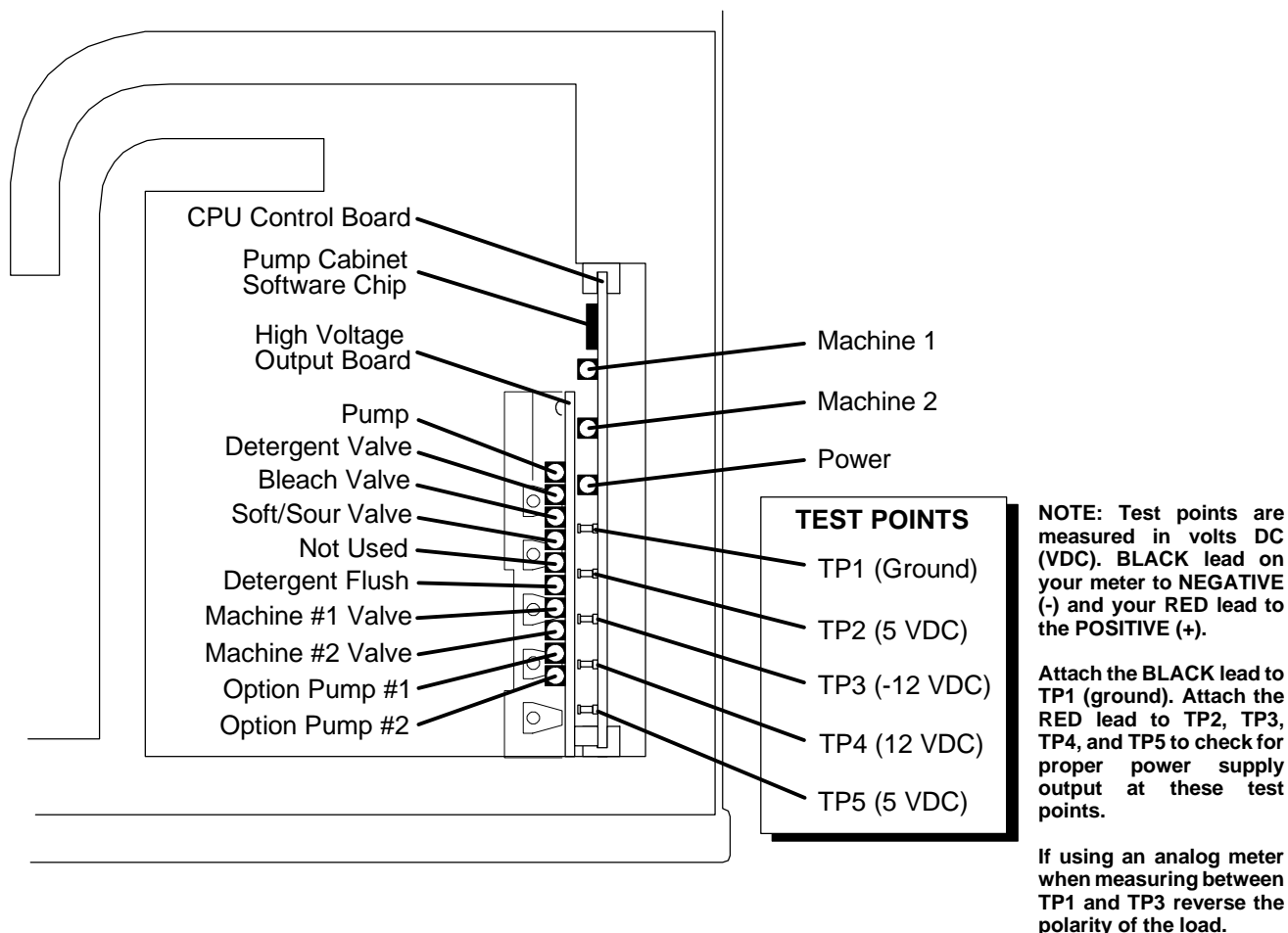


Figure 6-1

6.2 Electronic Hardware Related Issues

Symptom	Possible Cause	Action
6.2.1 The printer prints the message, Network error, print job halted".	1. The network cables became disconnected while Printer Module was retrieving data from Control Module.	a. Check connection at the receptacles. Reconnect cables and try again.
	2. Printer Module was unable to retrieve data from the Control Module.	a. Disconnect CRNet cable between Control Modules and request same or different report.
	3. The Printer Module is running on battery power and the battery is almost fully discharged.	a. Recharge battery or utilize the 120V wall adapter.
6.2.2 Reports are generated from one machine only, even though there are two machines in the system.	1. The network cable connectors are not fully seated on one of the Control Modules.	a. Check connection at the receptacles. Request printout from other Control Module.
	2. The network cable connecting Control Modules is defective.	a. Replace CRNet cable.

6.3 Logdata Report Issues

Symptom	Possible Cause	Action
6.3.1 The logdata report does not show any formula logs over the period of time requested.	1. The real time clock is programmed with the incorrect date.	a. Request all printouts with a "FROM" date of 01/01/YR. Reprogram the clock/calender with the correct data.
6.3.2 The asterisk does not appear in front of the formula start signal.	1. The data log entry has a nonzero value in the error column.	a. Data log entries with a nonzero error code are not Interpreted as starts.
	2. The formula start signal programmed into the Control Module does not match the start signal for the formula.	a. Program the correct start signal for the formula in the Control Module.
6.3.3 The formula runtime exception marks +/- do not appear in front of the stop signals for the formula runtimes which undershoot or overshoot the machine formula runtime.	1. The formula runtime short or long exception time programmed into the Control Module is incorrect.	a. Program the correct times in the Control Module.
	2. The formula stop signal programmed into the Control Module does not match the stop signal for the formula.	a. Program the correct stop signal in the Control Module.
	3. The data log entry for the stop signal has a nonzero error code.	a. Runtime indicators should be located on the correct stop signal.
6.3.4 The formula runtime exception marks +/- appear in the front of the stop signals for the formula runtimes which are within normal limits for the machine formula runtime.	1. The formula runtime short or long exception time programmed into the Control Module is incorrect.	a. Reprogram the Control Module with the correct time.
6.3.5 The number of formula runs shown in the Logdata report differs from the count shown in the productivity report by one or two.	1. A formula may have completed during or after the logdata printout was obtained. The Productivity Report and the Logdata report reflect the formula runs which are complete at the time of the printout was requested.	a. Generate reports when wash machines are idle.
6.3.6 The following information in the Logdata Report is incorrect or blank. <ul style="list-style-type: none"> ● Today's Date ● Customer Name ● Account Number 	1. The Control Module used to request the printed reports must be setup with this preprogrammed information. Once programmed, the Control Module will retain this information for the use in subsequent printouts.	a. Program the Control Module with the correct data/information. b. Refer to Control Module Programming.
	2. The Control Module the printout was requested from is different from the Control Module which was programmed with the correct information. Please note that the above information is obtained from the "Requesting Control Module".	a. Program the Control Module or copy the information using Receive Data In" feature.

6.4 Productivity Report Issues

Symptom	Possible Cause	Action
6.4.1 The report does not show any formula runs over the period of times requested.	1. The real time clock is programmed with the incorrect date. request all printouts with the "FROM" date of 01/01/YR.	a. Reprogram the clock/calender with the correct date.
	2. The formula stop signal programmed into the Control Module does not match the stop signal for the formula.	a. Program the correct stop signal into the Control Module.
	3. All log data entries for the stop signal have nonzero error codes.	a. Clear the product counters and check system operation.
6.4.2 The formula runtime exceptions are zero even though the formula runtimes undershoot or overshoot the machine formula runtime.	1. The formula runtime minimum and maximum time programmed into the Control Module is incorrect.	a. Program the correct runtimes in the Control Modules.
	2. The formula stop signal programmed into the Control Module does not match the stop signal for the formula.	a. Program the correct stop signal into the Control Modules.
	3. All log data entries for the stop signal has a nonzero value in the error column. Data log entries with a nonzero code are not interpreted as stop signals.	a. Clear the product counters and check system operation.
6.4.3 The formula runtime exceptions are nonzero even though the formula runtimes are within normal limits for the machine formula runtime.	1. The formula runtime minimum and maximum time programmed into the Control Module is incorrect.	a. Program the correct formula minimum and maximum times into the Control Module.
	2. The formula stop signal programmed into the Control Module does not match the Stop Signal for the formula.	a. Program the correct stop signal into the Control Module.
6.4.4 The number of formula runs shown in the Productivity report differs from the count in the Logdata Report by one or two.	3. A formula may have completed during or after the Productivity Report Printout was obtained. The Productivity report and the Logdata report reflect the formula runs which are completed at the time the printout was requested.	a. Generate reports while wash machines are idle.

Symptom	Possible Cause	Action
6.4.5 The following information in the printed report is incorrect or blank. <ul style="list-style-type: none"> • Today's date • Account Number • Ecolab Service Rep. Name • Labor Cost • Water Utility Cost • Sewage Utility Cost • Water temperature Rise 	1. The Control Module used to request the printed reports must be setup with this preprogrammed information. Once programmed, the Control Module will retain this information for the use in subsequent printouts.	a. Program the Control Module with the correct data/information. b. Refer to Control Module Programming.
	2. The Control Module the printout was requested from is different from the Control Module which was programmed with the correct information. Please note that the above information is obtained from the Requesting Control Module".	a. Program the Control Module or copy the information using Receive Data In" feature.
6.4.6 The same formula name appears twice.	1. There is a mismatch in the spelling of the formula names, or there are extra blanks embedded within the name, or at the end of the name.	a. Reprogram the formula name in all Control Modules to be the same. Cursor location when the <ENT> key is pressed is important.
6.4.7 One or more of the programmed formulas do not appear in the print out.	1. Formula names which begin with a space character are not allowed and will be ignored in this report.	a. Program the formula names without a space in the beginning.
6.4.8 The estimated weight figure differs from the expected weight figure by a huge amount for the some of the formulas.	1. The weight per occupant figure programmed for the formula may be incorrect.	a. Program the correct weight per occupant for the formula.
6.4.9 The estimated water consumption figure is far too small or large compared to actual usage.	1. The formula data information programmed into each Control Module is incorrect. This includes the following: <ul style="list-style-type: none"> • High level gallons • High level hot fills • High level split fills • High level cold fills • Low level gallons • Low level hot fills • Low level split fills • Low level cold fills 	a. Adjust programmed amounts for high and low level fills.
6.4.10 The estimated water and sewage costs are far too small or large compared to actual experience.	1. The water utility cost information programmed into the requesting Control Module is incorrect.	a. Adjust programmed amount of water and sewer costs.

<i>Symptom</i>	<i>Possible Cause</i>	<i>Action</i>
6.4.11 The estimated labor cost is far too small or large compared to actual experience	1. The total number of labor hours entered for the specified time period is incorrect.	a. Adjust the programmed amount of hours for the specified time period.
	2. The wage per hour is incorrect.	a. Adjust hourly wage figure.
6.4.12 The estimated energy cost is far too small or large compared to actual experience.	1. The hot water temperature or cold water temperature or the cost of energy information programmed into the requesting Control Module is incorrect.	a. Adjust the programmed account water temperature value or the water cost.

6.5 Consumption Report

Symptom	Possible Cause	Action
6.5.1 The following information in this printed report is incorrect or blank: <ul style="list-style-type: none"> • Today's Date • Customer Name • Account Number 	1. The Control Module used to request the printed reports must be setup with this preprogrammed information. Once programmed, the Control Module will retain this information for the use in subsequent printouts.	a. Program the Control Module with the correct data/information. b. Refer to Control Module Programming.
	2. The Control Module the printout was requested from is different from the Control Module which was programmed with the correct information. Please note that the above information is obtained from the Requesting Control Module".	a. Program the Control Module or copy the information using Receive Data In" feature.
6.5.2 The same product name appears twice.	1. There is a mismatch in the spelling of the product names, or there are extra blanks embedded within the name, or at the end of the name.	a. Re-program the product name in all Control Module to be the same. Cursor location when the <ENT> key is pressed is important.
6.5.3 One or more of the programmed products do not appear in the printout	1. Product names which begin with a space character are not allowed and will be ignored in this report.	a. Reprogram product names.
6.5.4 The cost PPD/POR number is far too high or low for all of the products entered.	1. The total occupancy number entered when requesting this report was incorrect for the entered reporting period.	a. Adjust the values for either the period or occupancy rate. b. Request Logdata Report and evaluate data.
6.5.5 The consumption data displayed on the Control Module is different than actual consumption.	1. TO and FROM dates are incorrect.	a. Print Logdata to obtain dates.
	2. The PPD/POR does not match the TO and FROM dates.	a. Evaluate PPD/POR for "TO" and "FROM" dates requested.
	3. Actual inventory is incorrect.	a. Check for all shipments.
	4. Dispenser dispensing inaccurately.	a. Check dispenser operation.

6.6 Printer Module/Printer Report Function Table

<i>Item</i>	<i>Activity</i>	<i>Time</i>
6.6.1 Printer Module Status Light	<ol style="list-style-type: none"> 1. The Printer Module status light is under software control, and will be turned on continuously after power up. If the light does not turn on after power up, this is an indication that the Printer Module is not functional. 2. The printer Module Status Light will blink rapidly while data is transferred to or from the Control Module. 3. The Printer Module Status Light will blink slowly while the printout is in the process of being transferred to the printer. 4. The Printer Module Status Light will be left on continuously after the printer module activity has halted. 	
6.6.2 Productivity Report	1. Obtain report specific data from the re- questing Control Module.	1 Second
	2. Obtain data from Control Module 1.	60 Seconds
	3. Process the data, transfer the printout to the printer and begin printing.	Immediate
	4. Obtain data from Control Module 2.	60 Seconds
	5. Process the data, transfer the printout to the printer and begin printing.	Immediate
6.6.3 Setup Report	1. Obtain report specific data from the re- questing Control Module.	1 Second
	2. Obtain data from Control Module 1.	13 Seconds
	3. Process the data, transfer the printout to the printer and begin printing.	Immediate
	4. Obtain data from Control Module 2.	13 Seconds
	5. Process the data, transfer the printout to the printer and begin printing.	Immediate
6.6.4 Logdata Report	1. Obtain report specific data from the re- questing Control Module.	1 Second
	2. Obtain data from Control Module 1.	60 Seconds
	3. Process the data, transfer the printout to the printer and begin printing.	Immediate
	4. Obtain data from Control Module 2.	60 Seconds
	5. Process the data, transfer the printout to the printer and begin printing.	Immediate

8.0 Appendixes

Appendix A Glossary of Terms

Formula Count	Calculated by the printer module using the logdata obtained from the Control Module(s) connected to the network at the time the printout is requested.
High Level Volume	Machine water volume for high level fills. (Entered)
High Level Hot Fills	Number of high level hot fills for the corresponding formula.
High Level Split Fills	Number of high level split fills for the corresponding formula. (Entered)
High Level Cold Fills	Number of high level Cold fills for the corresponding formula. (Entered)
Low Level Volume	Machine water volume for low level fills. (Entered)
Low Level Hot Fills	Number of low level hot fills for the corresponding formula. (Entered)
Low Level Split Fills	Number of low level split fills for the corresponding formula. (Entered)
Low Level Cold Fills	Number of low level Cold fills for the corresponding formula. (Entered)
Hot Water Weight	The weight of hot water used in the corresponding formula. (Calculated)Weight Per Unit Volume for water (Constant)
Split Water Weight	The weight of split water used in the corresponding formula. (Calculated)
Cost of Energy	The cost for the energy used to heat the water for all of the loads run for the corresponding formula. (Calculated)
Cost Per Therm	The utility cost per therm of energy. (Entered)
Temperature Rise	The difference between the hot water temperature and the cold water temperature. (Entered)
Cases Used	The number of cases of a given product that have been used. (Calculated)
Pump On Time	The amount of time the Pump Cabinet pump is ON while dispensing a liquid product. (Obtained from the logdata) Pump Capacity in units of Volume per Second. (Entered)
Volume Per Case	The volume of product contained in a case of the product. (Entered)
Weight Dispensed	Sum total weight of a given product which has been dispensed.
Weight Per Case	The weight of product contained in a case of the product. (Entered)
Conversion Factors	<p>The logdata is always logged and printed in fluid ounces for liquids and grams for solids.</p> <p>When U.S. measurement units are selected on the Control Module the following will apply.</p> <ul style="list-style-type: none">- Liquid volume is expressed in Gallons.- Solid weight is expressed in Pounds.- Temperature is expressed in degrees F. <p>When Metric units are selected on the Control Module, the following will apply.</p> <ul style="list-style-type: none">- Liquid volume is expressed in Liters.- Solid weight is expressed in Kilograms.- Temperature is expressed in degrees C.
Solids Related	<p>1 Kilogram = 1000 Grams</p> <p>1 Kilogram = 2.21 Pound</p>

Liquids Related	<p>1 Gallon = 128 Fluid Oz</p> <p>1 Liter = 33.8 Fluid Ounces</p>
Energy Related	<p>Energy (BTUs) = Delta T (degrees F) * Water Weight (Pounds)</p> <p>1 Therm = 100,000 BTU</p> <p>Water Density = 8.33 Pounds per Gallon</p> <p>Degrees F = 1.8 * C + 32</p>
Printer Module	Information from the Control Module will always be transferred to the printer module then forwarded into the printer.
Control Module	The supply Signal Input Board and the programmable keypad make up the Control Module.
CRNet Cable	This cable is used to transfer information from one Control Module to another. This cable is also used to connect the Printer Module to the Control Modules.
Printer Cable	This cable is used to transfer information from the printer module into the printer.
Printer	The printer is a Cannon Bubble Jet model BJ 10 (E, EX or SX)
Node Address	Machine number used for networking, not to be confused with machine number for dispensing.
Receive Data In	This system feature allows the Territory Manager to transfer programmed information from one Control Module to another. EXAMPLE: Program a Control Module then go to the other Control Module and RECEIVE DATA IN.
Network	Applies to the mechanism that allows the Control Modules and the Printer Modules to communicate for printing and transferring information.
Logdata	The system has a total capacity of 2132 log entries. By definition one product request is one log entry. The Logdata printout will provide a maximum of 14.2 pages of printed information. After the logdata has been filled the oldest piece of data will be overwritten by the next entry.

Appendix B Equations for Printouts

8.1 Productivity Report

Estimated Weight Calculation

1. Estimated Weight = Formula Count x Load Weight

Expected Weight Calculation

2. Expected Weight = Weight Per Occupant x Total Number Of Occupants

Estimated Energy Cost Calculation

3. Estimated Water Used = Formulas Count x (High Level Fills Volume x (High Level Hot Fills + High Level Split Fills + High Level Cold Fills) + Low Level Volume x (Low Level Hot Fills + Low Level Split Fills + Low Level Cold Fills))

Estimated Energy Cost Calculation

4. Cost Of Energy = Cost Per Therm x (Formula Count x Temperature Rise x (Hot Water Split Water Weight / 2)) / (100,000 x Efficiency)
5. Efficiency - Heating Efficiency Approx = 75%
6. Hot Water Weight = (High Level Hot Fills x High Level Volume + Low Level Hot Fills x Low Level Volume) x Weight / Volume
7. Split Water Weight = (High Level Split Fills x High Level Volume + Low Level Split Fills x Low Level Volume) x Weight / Volume

8.1.1 Consumption Report (Control Module LCD Display)

Liquid Products

8. Cases Used = Pump On Time x Pump Size / Volume Per Case

Solid Products

9. Cases Used = Weight Dispensed / Weight Per Case
10. Cost Per Patient Day = (Cases Used x Cost Per Case) / Number Of Patient Days
11. Cost Per Occupied Room = (Cases Used x Cost Per Case) / Number Of Occupied Rooms

Appendix C Printout Status Message Displayed

8.1.2 Printer On Line - Printer Off Line

- The printer is on line with no other activity.
- The Printer is off line. To generate a printout the printer must be on-line.

8.1.3 Printer Disconnect

- The printer cable is not connected or the power to the printer is off.

8.1.4 Print Job Active

- A request to generate a printout has occurred and the request is in process.

8.1.5 Print Que Loaded

- The Printer Module has loaded the printer with the information necessary to generate a printout.

8.1.6 Generating Data Please Wait

- The system is in process of generating data for the Consumption Report. The user must wait for the display to change to complete the report. If the user does not wait then the process will need to be repeated.

8.1.7 No Device Connected

- The Printer Module is not connected to the Control Module.

8.1.8 File Write Failed

- The Control Module was not able to tell the Printer Module to generate a printout. Possible causes of this message are listed below.

8.1.9 File Read Failed

- The Control Module was not able to read the status of the Printer Module after a printout has been requested. Possible causes of this message are listed below.

8.1.10 File Write And File Read Failed Causes

1. CRNet cable not completely inserted into connector.
2. No power applied to the Printer Module.
3. Printer Module battery discharged.
4. Cycle Power to both the Solid System III and the Printer Module and try again.
5. Printer Module defective..
6. Control Module defective. If the **RECEIVE DATA IN** feature works then the Control Module is not defective.

8.1.11 Receive Data In Done

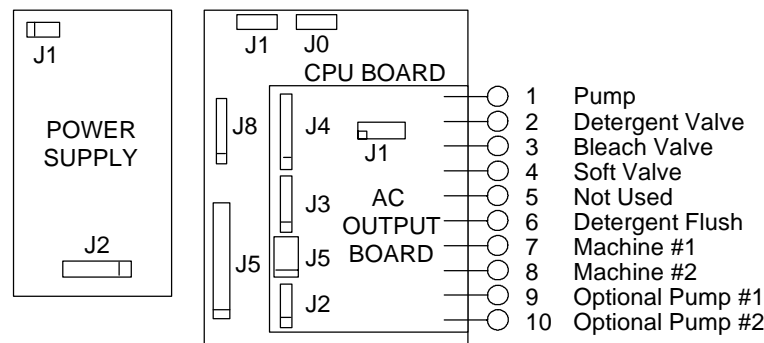
- The request to transfer the account, product, and formula names from the other Control Module has been completed. If the user request that the Control Module Receive Data In the user should wait until the DONE message is displayed.

8.1.12 No Other Systems Are Connected Via The Network Cable. Please Wait.

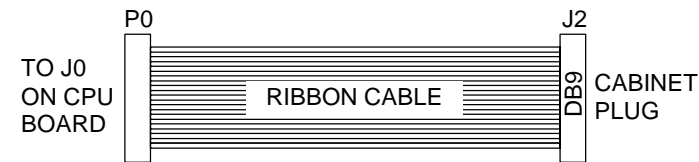
- This message tells the user that a request to use the network features has been requested but failed. The CRNet cable is not connected or the cable is defective. The system will reset. The user can then reseal the network cable or replace the cable and try the feature again.

Appendix D Solid System III Cable Diagram

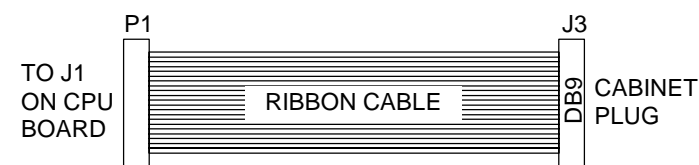
PC BOARD CONNECTOR LAYOUT



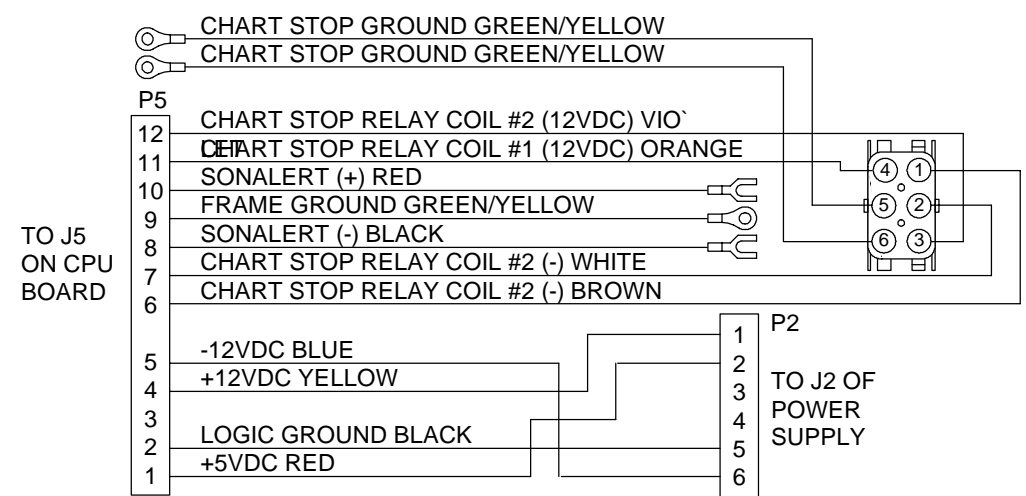
RIBBON CABLE



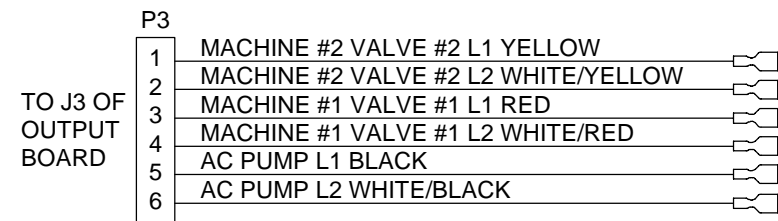
RIBBON CABLE



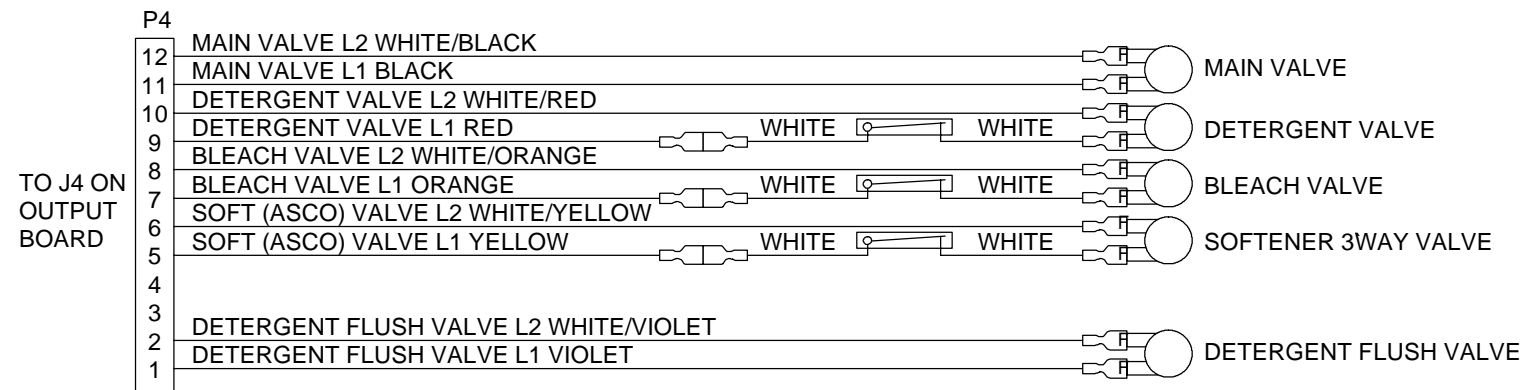
CONTROL/POWER SUPPLY CABLE



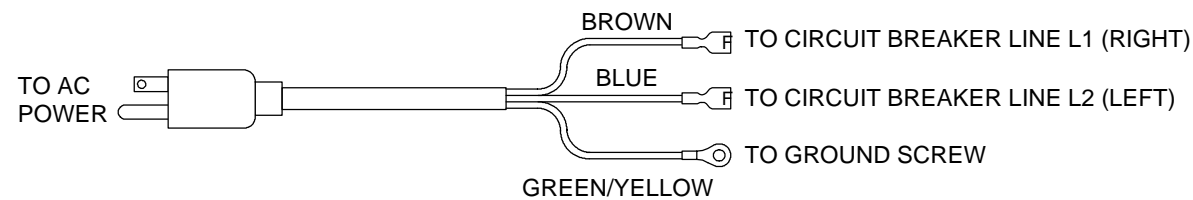
AC PUMP/VALVE CABLE



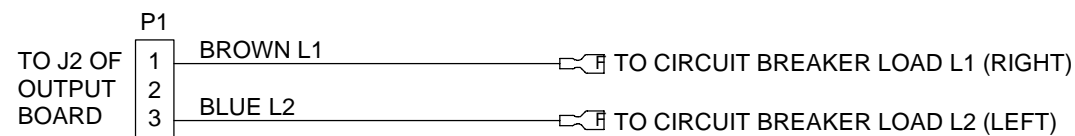
PRODUCT VALVE CABLE



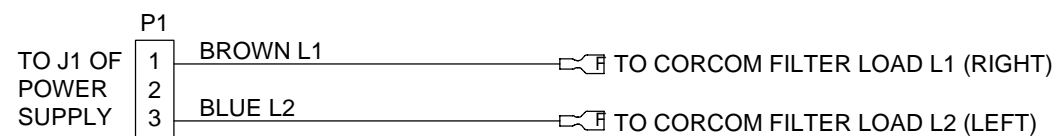
AC POWER CABLE



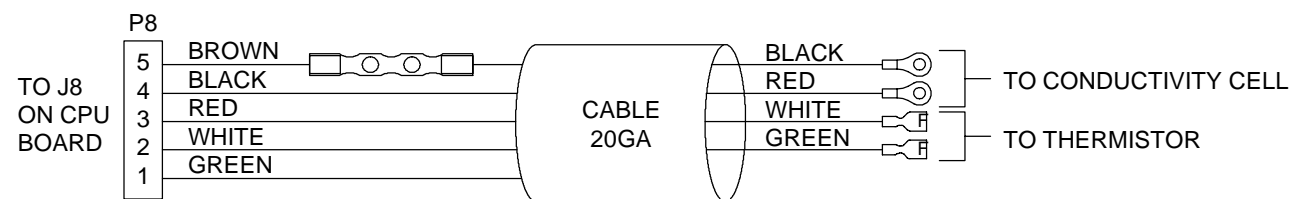
AC OUTPUT BOARD CABLE



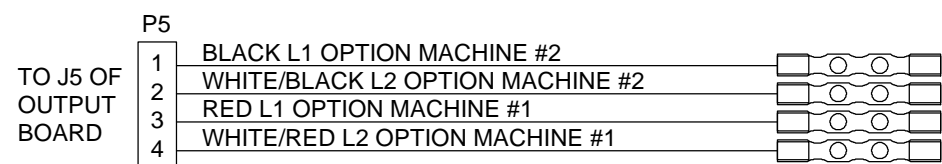
AC POWER SUPPLY CABLE



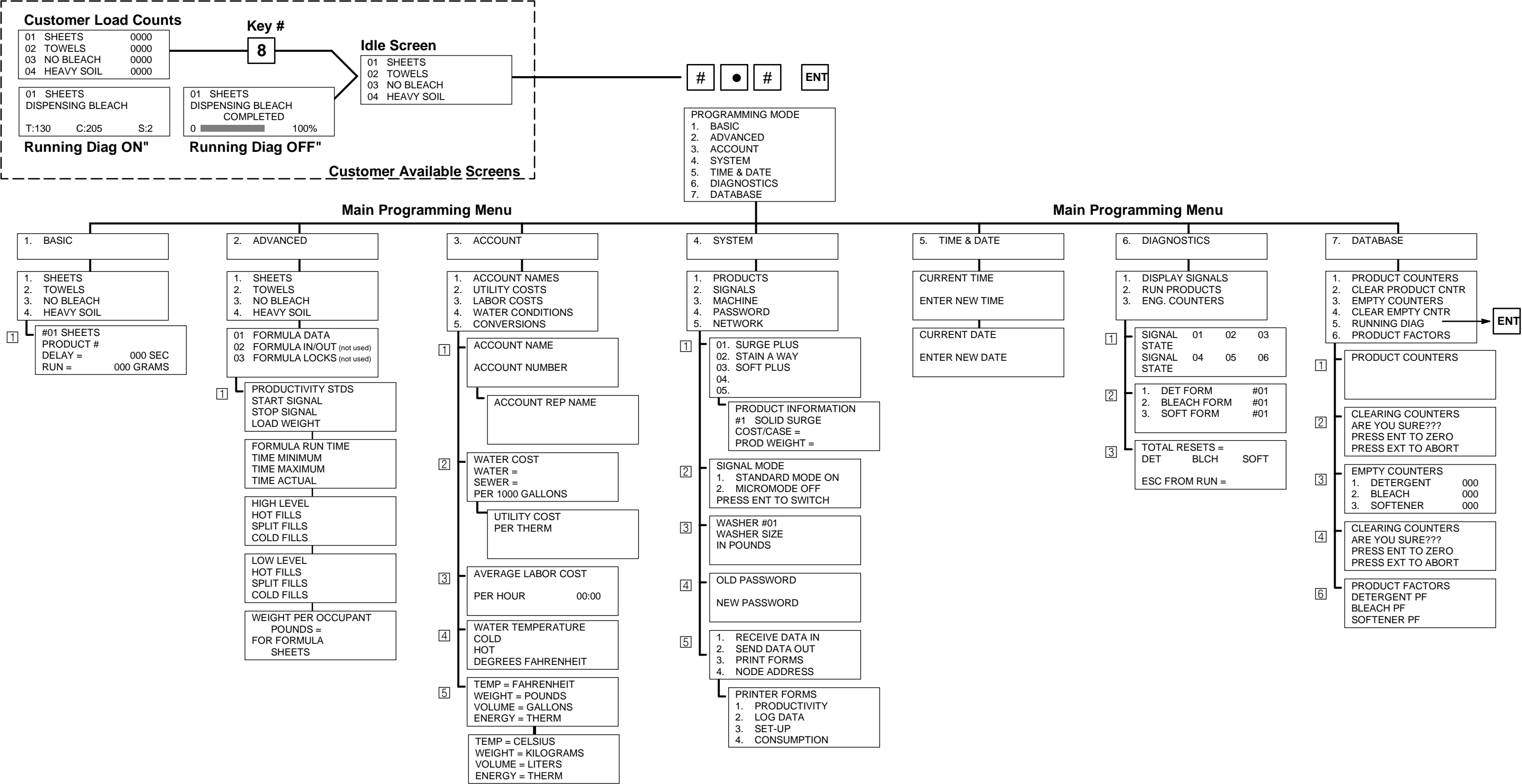
CONDUCTIVITY CELL CABLE



OPTIONAL PUMP



Appendix E Programming Flowchart



NOTE: Boxed numbers indicate sub-menu(s) for item number selected on main programming screen. For example, selecting 1. Display Signals" from 6. Diagnostics" presents the submenu referenced by a 1.

Appendix F Worksheets

The following worksheets have been provided for recording account information:

- Set-up Record
- Wash Formula

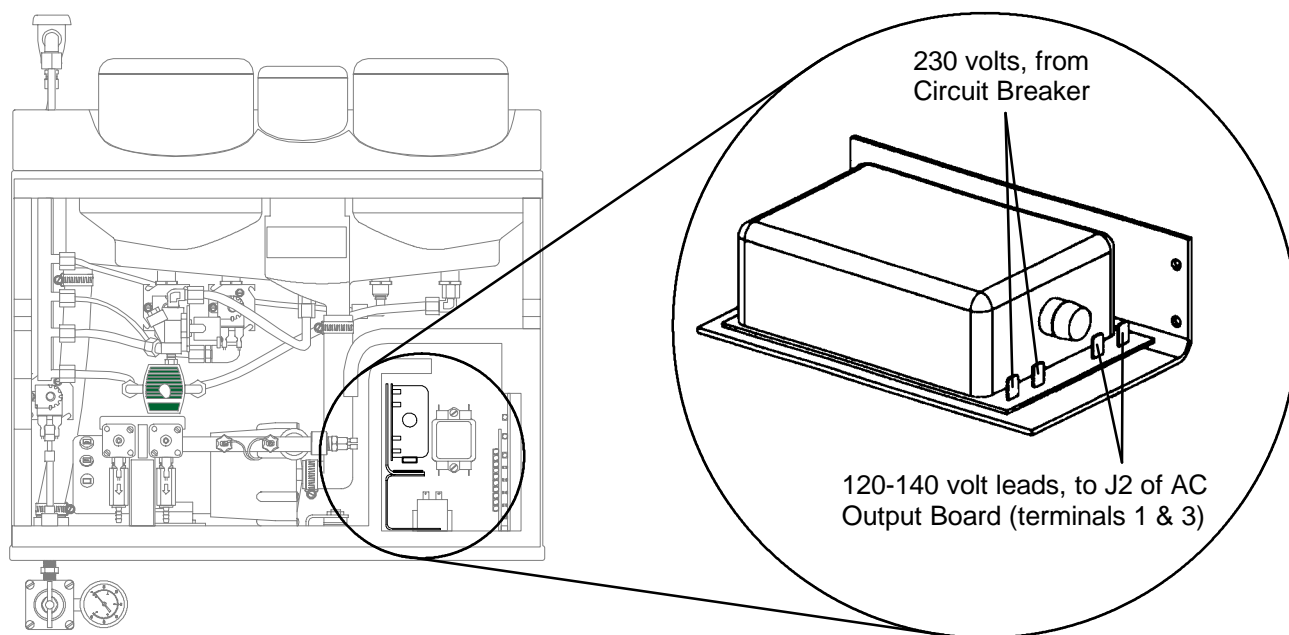
Multiple copies of each worksheet have been included. Ensure you keep one copy as a master to use for xeroxing as needed.

Appendix G Principle and Operation of the Power Converter"

NOTE: The "Power Converter" is required for any 190-230 volt power input operation of Solid System III.

The principle of operation is that it converts 190-230 volt power (either 50 or 60 Hz) to approximately 130 volts/60 Hz power to power the Solid System III. The *Power Converter* is located in the pump cabinet, directly above the main power switch, with the input terminals (190-230 volt leads) connected to the main power switch.

The *Power Converter* is an added component to the SOLID SYSTEM III to enable it to be used in international markets (190-230 volt/50 or 60 Hz power). All other components and operation procedures are as outlined in the SS III *INSTALLATION AND OPERATION manual*. The only special troubleshooting" procedures required for the *Power Converter* are described below.



Troubleshooting Procedures:

1. **The only failure mode for the Power Converter is no output power (130 volts) with good input power (190-230 volts).** This failure mode will render the SS III totally inoperative including pumps, lights, and operator panel.
CAUTION: AVOID "SHORTING" ACROSS THE POWER CONVERTER TERMINALS. THE FUSE ONLY PROTECTS THE DEVICE FROM FIRE, NOT FROM IRREVERSIBLE DAMAGE.
 - a. Test the INPUT terminals of the Power Converter for 190-230 volts; if no power, check SS III power switch (circuit breaker); if power is present, test *Power Converter* OUTPUT terminals.
 - b. Test the OUTPUT terminals for 115-145 volts with the sump pump running; if no power, replace the Power Converter; if approx. 130 volts, then the *Power Converter* is okay; check the AC OUTPUT BOARD (see pages 6-2, and 6-3 in the SS III I & O manual for details).
2. Spare parts list, recommended to have available in case of component failure:

8349-3163	Power Converter	9252-4974	Power Supply
8390-1009	Fuse: 5x20mm 2.5A, 230V	9252-3335	AC output Board
8640-5013	Pump	9258-1313	CPU Board
9252-4339	Conductivity Cell	9200-1445	Input Board
8526-4158	Machine Valves	9258-2121	Network Control Module
9204-2324	Water, Bleach Valves	9252-3885	Drain Tube
9252-4321	3-Way Valve	9204-2332	Flush, Detergent Valve
9210-2136	XFMR 115/230/460-22.5V		

Appendix H Operating Instructions for Account Personnel

8.2 Keypad Operation

8.2.1 Formula Selection (two methods)

Method 1

1. To select the correct wash formula, use the ↑ and ↓ keys located at the right hand side of the keypad.
2. When you press the ↑ and ↓ keys, you will see the cursor move to a new formula name.
3. Select the correct wash formula by positioning the cursor to the left of the formula number and name.
4. Start the wash machine.

Method 2

1. Use the number keys on the keypad.
2. Use the correct pair of numbers to select any of the 16 formula's available.

EXAMPLE: Select formula number 15; press 1 then 5. The cursor has automatically shifted to formula 15.

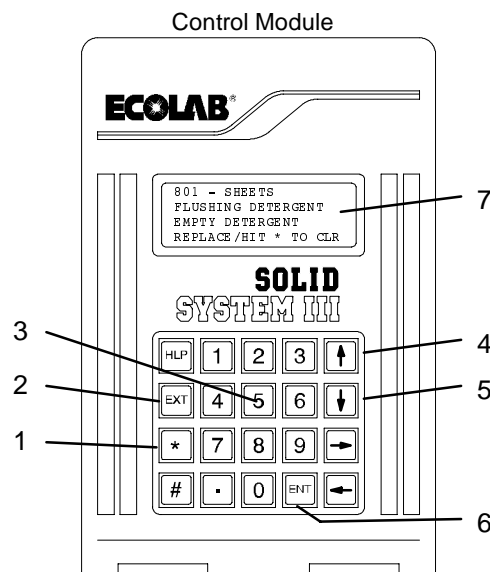
3. Start the wash machine.

8.2.2 Load Counts

1. To review Load Counts, press the <EXT> key.
2. Press 8 on the keypad. The load counts up to 9999" and can be viewed on the right hand side of the display screen.
3. Use the ↑ and ↓ keys to review all 16 formulas.
4. Press the <EXT> key to return to the Idle Screen.

8.2.3 Empty Product Alarm Reset

1. Read the display when the Empty Capsule Alarm" sounds. The display tells you which product container is empty.
2. Shut off the alarm by pressing the asterisks (*) key on the keypad.
3. Replace the empty capsule with a new one.



8.2.4 Customer Used Keys

1. Asterisk Key (clear empty product alarm)
2. Exit Key
3. Number Keys (0 thru 9)
4. Up Arrow
5. Down Arrow
6. Enter Key
7. Display